Vol. 1042 Number 3

OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

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OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

May 15, 1984 Volume 1042 Number 3

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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.

THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.

GENERAL INFORMATION concerning PATENTS.

GENERAL INFORMATION concerning TRADEMARKS.

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1042 O.G. 2 on May 15, 1984.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Domestic PCT fees were increased on Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published in the *Official Gazette* at 1021 O.G. 11 on Aug. 10, 1982.

The Search fee for the European Patent Office was changed as of Feb. 14, 1984 and was announced in the *Official Gazette* at 1039 O.G. 142 on Feb. 21, 1984.

International PCT fees were changed by the PCT Assembly effective Jan. 1, 1984 and were announced in the *Official Gazette* at 1037 O.G. 12 on Dec. 13, 1983.

The current schedule of PCT fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
· No corresponding prior U.S. national application filed	500.00
· Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
· All cases	620.00
International Fees	
Basic fee (first 30 pages)	295.00
Basic Supplemental fee (for each page over 30)	6.00
Designation fee (for each national or regional office)	70.00

GERALD J. MOSSINGHOFF,
Apr. 13, 1984. *Commissioner of Patents and Trademarks.*

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,359,734, Re. S.N. 583,352, Filed Feb. 24, 1984, Cl. 367/101, SIGNAL PROCESSING SYSTEM, Wesley J. Bachman, Owner of Record: *Dickey-John Corp., Auburn, Ill.,* Attorney or Agent: Richard R. Trexler, et al., Ex. Gp.: 222

4,384,350, Re. S.N. 586,172, Filed Mar. 5, 1984, Cl. 365/229, MOS BATTERY BACKUP CONTROLLER FOR MICROCOMPUTER RANDOM ACCESS MEMORY, Yong K. Lee, et al., Owner of Record: *Fairchild Camera and Instrument Corp., Mountain View, Calif.,* Attorney or Agent: Kenneth Olsen, et al., Ex. Gp.: 235

4,404,182, Re. S.N. 568,710, Filed Jan. 6, 1984, Cl. 424/005, ETHIODIZED OIL EMULSION FOR INTRAVENOUS HEPATOGRAPHY, Michael Vermess, et al., Owner of Record: *The United States of America as Represented by the Department of Health and Human Services, Washington, D.C.,* Attorney or Agent: John S. Roberts, Jr., Ex. Gp.: 125

4,412,359, Re. S.N. 587,955, Filed Mar. 9, 1984, Cl. 3/13, POSTERIOR CHAMBER LENS IMPLANT, William D. Myers, Owner of Record: *Inventor,* Attorney or Agent: Ernest I. Gifford, Ex. Gp.: 336

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

No Issues This Publication.

Patent Cooperation Treaty (PCT) Update

Accession to the Patent Cooperation Treaty (PCT) by the Sudan and by Bulgaria, and Listing of PCT Member Countries.

The Patent and Trademark Office has received notification from the World Intellectual Property Organization (WIPO) that the Sudan deposited its instrument of accession to the PCT on 16 Jan. 1984, and that Bulgaria deposited its instrument of accession to the PCT on 21 Feb. 1984. Therefore, according to PCT Article 63(2), the Sudan may be designated in international applications filed on and after 16 Apr. 1984; Bulgaria may be designated in international applications filed on and after 21 May 1984.

Listing of PCT Member Countries

	Country	Ratification or Accession	Date of Ratification or Accession	Date from which Country may be Designated
(1)	Central African Republic*	Accession	15 September 1971	01 June 1978
(2)	Senegal*	Ratification	08 March 1972	01 June 1978
(3)	Madagascar	Ratification	27 March 1972	01 June 1978
(4)	Malawi	Accession	16 May 1972	01 June 1978
(5)	Cameroon*	Accession	15 March 1973	01 June 1978
(6)	Chad*	Accession	12 February 1974	01 June 1978
(7)	Togo*	Ratification	28 January 1975	01 June 1978
(8)	Gabon*	Accession	06 March 1975	01 June 1978
(9)	United States of America	Ratification	26 November 1975	01 June 1978
(10)	Germany, Federal Republic of**	Ratification	19 July 1976	01 June 1978
(11)	Congo*	Accession	08 August 1977	01 June 1978
(12)	Switzerland**	Ratification	14 September 1977	01 June 1978
(13)	United Kingdom**	Ratification	24 October 1977	01 June 1978
(14)	France**	Ratification	25 November 1977	01 June 1978
(15)	Soviet Union	Ratification	29 December 1977	01 June 1978
(16)	Brazil	Ratification	09 January 1978	01 June 1978
(17)	Luxembourg**	Ratification	31 January 1978	01 June 1978
(18)	Sweden**	Ratification	17 February 1978	01 June 1978
(19)	Japan	Ratification	01 July 1978	01 October 1978
(20)	Denmark	Ratification	01 September 1978	01 December 1978
(21)	Austria**	Ratification	23 January 1979	23 April 1979
(22)	Monaco	Ratification	22 March 1979	22 June 1979
(23)	Netherlands**	Ratification	10 April 1979	10 July 1979
(24)	Romania	Accession	23 April 1979	23 July 1979
(25)	Norway	Ratification	01 October 1979	01 January 1980
(26)	Liechtenstein**	Accession	19 December 1979	19 March 1980
(27)	Australia	Accession	31 December 1979	31 March 1980
(28)	Hungary	Ratification	27 March 1980	27 June 1980
(29)	Democratic People's Republic of Korea (North Korea)	Accession	08 April 1980	08 July 1980
(30)	Finland	Ratification	01 July 1980	01 October 1980
(31)	Belgium**	Ratification	14 September 1981	14 December 1981
(32)	Sri Lanka	Accession	26 November 1981	26 February 1982
(33)	Mauritania*	Accession	13 January 1983	13 April 1983
(34)	Sudan	Accession	16 January 1984	16 April 1984
(35)	Bulgaria	Accession	21 February 1984	21 May 1984

*Members of African Intellectual Property Organization (OAPI) regional patent system. Only regional patent protection is available for OAPI member countries. A designation of any country is an indication that all OAPI countries have been designated. Note: Only one designation fee is due regardless of the number of OAPI member countries designated.

** Members of European Patent Convention (EPC) regional patent system. Either national patents or European patents for member countries are available through PCT, except for France and Belgium, for which only European patents are available if PCT is used. Note: Only one PCT designation fee is due if European regional patent protection is sought for one, several or all EPC member countries.

Apr. 13, 1984.

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

PATENT NOTICES

Certificates of Correction for the Week of May 15, 1984

3,618,659	4,399,289	4,414,553	4,424,922
3,994,221	4,400,828	4,414,608	4,424,942
4,017,271	4,401,135	4,415,271	4,425,670
4,182,180	4,401,905	4,415,319	4,425,964
4,251,831	4,402,047	4,417,740	4,425,967
4,269,506	4,402,996	4,417,915	4,426,097
4,287,198	4,403,100	4,418,004	4,426,151
4,290,112	4,403,169	4,418,085	4,426,219
4,334,780	4,404,445	4,418,189	4,426,370
4,342,729	4,404,485	4,418,284	4,426,700
4,344,944	4,404,974	4,418,524	4,426,911
4,360,600	4,405,078	4,418,686	4,426,921
4,362,734	4,405,291	4,418,991	4,427,348
4,363,911	4,405,679	4,419,665	4,427,934
4,367,452	4,405,770	4,419,975	4,428,404
4,373,678	4,405,916	4,420,049	4,428,815
4,374,280	4,406,106	4,420,321	4,429,090
4,381,562	4,406,281	4,420,544	4,429,205
4,383,092	4,406,458	4,420,595	4,429,778
4,383,325	4,407,857	4,420,685	4,429,812
4,385,940	4,408,083	4,420,751	4,429,907
4,386,315	4,409,421	4,421,182	4,429,961
4,387,304	4,409,453	4,421,197	4,430,735
4,387,538	4,410,900	4,421,433	4,431,064
4,392,212	4,411,414	4,421,629	4,431,759
4,393,776	4,411,446	4,421,829	4,431,986
4,395,332	4,412,610	4,422,506	4,432,132
4,396,063	4,413,003	4,422,931	4,432,478
4,397,058	4,413,543	4,423,213	4,432,838
4,397,871	4,413,687	4,423,308	4,434,084
4,398,106	4,414,102	4,423,518	4,434,463
4,398,504	4,414,225	4,424,165	

Disclaimers

3,446,283.—*August B. Baumstimler,* Odessa, Tex. METHOD AND APPARATUS FOR SIMULTANEOUSLY CLEANING A WELL AND REMOVING A DOWNHOLE TOOL. Patent dated May 27, 1969. Disclaimer filed Jan. 30, 1984, by the *inventor.*

Hereby enters this disclaimer to claims 1, 2, 3 and 4 of said patent.

4,104,339.—*James G. Fetz,* Baldwin Park and *Ronald P. Jensen,* Glendale, Calif. METHOD FOR THE MANUFACTURE OF INTRAOCULAR LENSES. Patent dated Aug. 1, 1978. Disclaimer filed Feb. 7, 1984, by the *inventors.*

The term of this patent subsequent to Nov. 30, 1993, has been disclaimed.

4,237,222.—*Hideo Misaki; Yoshifumi Horiuchi; Kazuo Matsuura* and *Saburo Harada,* Shizuoka, Japan. LACTATE OXIDASE PROCESS FOR THE MANUFACTURE THEREOF AND ANALYTICAL METHOD AND KIT FOR THE USE OF THE SAME. Patent dated Dec. 2, 1980. Disclaimer filed Mar. 20, 1984, by the assignee, *Toyo Jozo Kabushiki Kaisha.*

Hereby enters this disclaimer to claims 1, 2 and 5–10 of said patent.

4,308,987.—*Merrill Solomon,* Potomac, Md. REMAILABLE ENVELOPE. Patent dated Jan. 5, 1982. Disclaimer filed Mar. 16, 1984, by the assignee, *21st Century Envelope Co., Inc.*

Hereby enters this disclaimer to claims 1, 2, 4, 5, 7, 8, 9, 10 and 16 of said patent.

4,318,043.—*Lawrence E. Crooks,* Richmond; *John C. Hoenninger III,* Berkeley; and *Mitsuaki Mrakawa,* San Mateo, Calif. METHOD AND APPARATUS FOR RAPID NMR IMAGING OF NUCLEAR DENSITIES WITHIN AN OBJECT. Patent dated Mar. 2, 1982. Disclaimer filed Mar. 13, 1984, by the assignee, *The Regents of the University of California.*

The term of this patent subsequent to Oct. 27, 1998, has been disclaimed.

Dedications

4,090,791.—*Iqbal Siddiqi,* Veyrier and *Tito Suva,* Chatelaine, Switzerland and *Christian Roehrich,* Chaillevette, France. DEVICE FOR CYCLICALLY REPEATING A SERIES OF COLORIMETRIC ANALYSIS ON EACH OF A SUCCESSION OF SAMPLES. Patent dated May 23, 1978. Dedication filed Mar. 26, 1984, by the assignee, *Battelle Memorial Institute.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

4,150,922.—*Gerard Cuenoud,* Grand-Lancy; *Rudolf Farkas,* Geneva; *Georges Revillet,* Onex and *Manuel Sanz,* Grand-Lancy, Switzerland. ELECTROMAGNET MOTOR CONTROL FOR CONSTANT VOLUME PUMPING. Patent dated Apr. 24, 1979. Dedication filed Mar. 26, 1984, by the assignee, *Battelle Memorial Institute.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

4,295,948.—*Alain Roman,* Bossey; *Pierre Chevreux,* St. Jean de Gonvillo, France; *Manfred Wust,* Dardagny; and *Jacques Ehretsmann,* Conches, Switzerland. PHOTOCURABLE ADHESIVE FROM ACRYLIC ACID, ACRYLAMIDE, DIMETHYLAMINOETHYL METHACRYLATE, BENZOPHENONE AND METHYL ETHYL KETONE. Patent dated Oct. 20, 1981. Dedication filed Mar. 26, 1984, by the assignee, *Battelle Memorial Institute.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

Disclaimers and Dedications

4,001,663.—*William E. Bray,* Houston, Tex. SWITCHING REGULATOR POWER SUPPLY. Patent dated Jan. 4, 1977. Disclaimer and Dedication filed Jan. 26, 1984, by the assignee, *Texas Instruments, Inc.*

Hereby disclaims and dedicates to the Public claims 1–39 of said patent.

4,092,709.—*William G. Voigt* and *William F. Jergens,* Houston, Tex. MULTIPLE OUTPUT SELF OSCILLATING CONVERTER REGULATOR POWER SUPPLY. Patent dated May 30, 1978. Disclaimer and Dedication filed Jan. 26, 1984, by the assignee, *Texas Instruments, Inc.*

Hereby disclaims and dedicates to the Public claims 1–11 of said patent.

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*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF March 31, 1984

PATENT EXAMINING GROUPS	Actual Filing Date of Action New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	10-28-82
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	5-12-76
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	9-30-82
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	3-18-83
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director	3-22-82
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	6-01-81
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	9-24-81
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director	7-19-82
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	1-26-81
DESIGN, GROUP 290—K. L. CAGE, Director	1-14-71
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	3-16-82
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	6-10-82
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	11-04-76
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	5-14-82
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	7-23-81

Expiration of patents: The patents within the range of numbers indicated below expire during March 1984, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,307,200 to 3,311,920, inclusive

Plant Patents ..... Numbers 2,723 to 2,729 inclusive

REISSUES

MAY 15, 1984

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,584

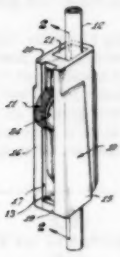
APPARATUS FOR REGULATING FLUID FLOW THROUGH PLASTIC TUBING

Marvin Adelberg, 16821 Oak View Dr., Encino, Calif. 91436

Original No. 3,685,787, dated Aug. 22, 1972, Ser. No. 855,907, Sep. 8, 1969. Application for reissue Aug. 10, 1981, Ser. No. 256,707

Int. Cl.³ F16K *7/06*

U.S. Cl. 251—6 **9 Claims**



1. A flow regulator for controlling the rate of flow of fluid through a flexible plastic tubing comprising:

a body formed with a passage to receive the tubing;

a clamping surface elongated in the direction of the tubing through said body and integrally formed in said body;

a clamping member mounted on said body for translation longitudinally of said body through a given distance above said clamping surface to unyieldingly define a clearance with respect to said clamping surface of substantially twice the nominal wall thickness of the tubing;

and an opening defining an elongated channel extending longitudinally in said clamping surface [to] *and into* which a portion of the wall in the tubing is forced by said clamping member,

said body, said clamping surface, said clamping member, and said channel together defining a cross-sectional area smaller than the normal cross-sectional area included by the unclamped tubing and which varies between the ends of said channel as said clamping member is moved relative to said channel.

Re. 31,585

LONG TIME EXPOSURE PREVENTING DEVICE FOR CAMERA WITH ELECTRONIC FLASH

Masahiro Kawasaki, and Yoshio Sawada, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

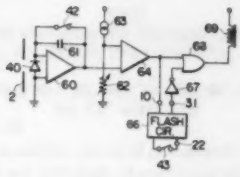
Original No. 4,209,245, dated Jun. 24, 1980, Ser. No. 944,517, Sep. 20, 1978. Application for reissue Jun. 22, 1982, Ser. No. 391,042

Claims priority, application Japan, Sep. 20, 1977, 52-127931

Int. Cl.³ G03B *7/08, 15/03*

U.S. Cl. 354—459 **24 Claims**

11. A camera system, comprising; means for generating a correct exposure signal indicative of a correct exposure value, flash means for emitting a flash of light, and including flash triggering means, flash stopping means, and an output, said correct exposure signal being applied as an input to said flash stopping means, means connected to said output for producing a signal indicative of the completion of a flash operation, and logic means for forming a



logical sum of said flash operation completion signal and said correct exposure signal to generate a shutter closing signal.

Re. 31,586

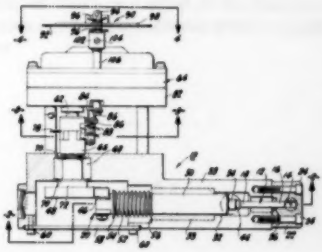
LIQUID CHROMATOGRAPHY PUMP

Haakon T. Magnussen, Jr., Pinole, Calif., assignor to Altex Scientific, Inc., Berkeley, Calif.

Original No. 4,180,375, dated Dec. 25, 1979, Ser. No. 913,359, Jun. 7, 1978. Continuation-in-part of Ser. No. 761,433, Jan. 21, 1977, Pat. No. 4,131,393. Application for reissue Feb. 9, 1981, Ser. No. 232,945

Int. Cl.³ F04B *49/06*

U.S. Cl. 417—22 **6 Claims**



5. A fluid pump mechanism for delivering fluid against a back pressure comprising:

a piston movable within a chamber for drawing fluid into the chamber during a chamber filling interval, pressurizing the fluid during a pressurizing interval and delivering the pressurized fluid from the chamber during a delivery interval of piston movement;

means for moving the piston at a predetermined rate during delivery of the pressurized fluid;

means including a pressure transducer communicating with the chamber for generating a signal having a value related to the pressure of fluid in the chamber;

means for storing the value of the signal generated during a delivery interval;

means for comparing a present value of the signal during the chamber pressurizing interval with the stored value; and

means for changing the rate of piston movement during at least a portion of the chamber pressurizing interval to a rate exceeding the predetermined rate by an amount related to any difference between said present and stored values.

PLANT PATENTS

GRANTED MAY 15, 1984

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,231
PLUM TREE, "ALETA ROSE"

Loretta J. Strohmaier, 9162 Ave. 392 (executrix); Phillip D. Strohmaier, 39252 Rd. 88, both of Dinuba, Calif. 93618, and Alfred W. Strohmaier, deceased, late of Dinuba, Calif.

Filed Oct. 29, 1982, Ser. No. 437,746
Int. Cl.³ A01H *5/03*
U.S. Cl. Plt.—38 **1 Claim**

1. A new and distinct variety of plum tree, substantially as illustrated and described, characterized by similarity in tree and fruit characteristics to the Simka variety of plum tree (U.S. Plant Pat. No. 1,882), but distinguished therefrom and characterized as to novelty by bearing fruit which ripens approximately ten days earlier than fruit of the Simka variety and which, when ripe, has a 90 percent to full red-purple skin coloration.

5,232
DISTINCT VARIETY OF STRAWBERRY PLANT—RUBY RED

Albert B. Cook, Rockport, Ind., assignor to Herschel L. Boll, Champaign, Ill.

Filed Aug. 9, 1982, Ser. No. 406,378
Int. Cl.³ A01H *5/03*
U.S. Cl. Plt.—48 **1 Claim**

1. A new and distinct variety of strawberry plant substantially as herein shown and described, characterized by its very large plant, its late season of maturity, and its very large fruit.

5,233
TRICOLOR VARIEGATED PITTOSPORUM PLANT

Ted L. Turner, Sr., 6503 S. Padre Island Dr., Corpus Christi, Tex. 78412

Filed Nov. 29, 1982, Ser. No. 445,727
Int. Cl.³ A01H *5/00*
U.S. Cl. Plt.—54 **1 Claim**

1. A new and distinct variety of pittosporum, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of: A dwarf and compact habit of growth makes it especially suitable as a border plant, as a small hedge, in planter boxes and as a pot plant; a slow rate of growth which is advantageous in that frequent pruning is not necessary to maintain the shrub in a pleasing shape; an ability to be asexually reproduced; the ability to provide a shrub having three colors by reason of the variegated nature of all or substantially all of the broadleaf evergreen leaves occuring on the new variety, the variegation consisting of irregular shaped areas of dark green, medium green and pale yellow, with the dark green area of a leaf generally being in the central base area of the leaf, and the medium green and pale yellow areas generally forming an irregular margin area on each leaf, the pattern of variegation varying from leaf to leaf, and which leaves grow alternately in a whorl on the branches; and the ability to tolerate pruning in order that attractive shapes can be maintained.

PATENTS

GRANTED MAY 15, 1984

ERRATA

For CLASS	See PATENT NO.
128–760	4,447,939
122–017	4,448,136
134–076	4,448,221
181–234	4,448,284
548–165	4,448,399
365–185	4,448,400
361–331	4,448,444
346–206	4,448,445
346–224	4,448,446
204–140	4,448,475
181–227	4,448,538
502–074	4,448,711
118–699	4,449,241

PATENTS

GRANTED MAY 15, 1984

GENERAL AND MECHANICAL

4,447,911
JUMPSUIT
Irene C. Marcellaro, 1746 Princeton Ave., Trenton, N.J. 08638
Filed Sep. 3, 1980, Ser. No. 183,967
Int. Cl.³ A41D *13/02*
U.S. Cl. 2—79 **1 Claim**

1. An improved unitary pants-suit garment for covering the upper and lower torso of the wearer, said garment having an upper opening for the neck of the wearer, sleeves and pant legs, said garment comprising:

a unitary torso enclosing garment having a vertical opening in the mid-frontal area extending from the neck opening to the waist area;

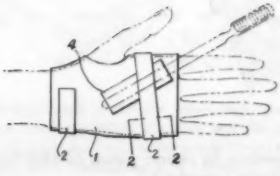
first hidden zipper connected along said garment front opening for closing said front opening;

said garment having a rear lower torso, triangular shaped panel formed by a horizontal, rear, waist high opening and a vertical, side opening, said panel horizontal and vertical openings being of sufficient length to permit exposure of the lower rear torso of the wearer;

second hidden zipper connected to said horizontal rear opening; and

third hidden zipper connected to said vertical side opening whereby said triangular shaped garment panel is not distinguishable from said overall garment when said second and third zippers are closed.

4,447,912
CRIPPLED HAND ASSISTING DEVICE
Rosemary K. Morrow, Huntington Beach, Calif., assignor to Philip A. Putman, Huntington Beach, Calif.
Filed Feb. 14, 1983, Ser. No. 466,225
Int. Cl.³ A61F *5/10*; **A41D** *19/00*
U.S. Cl. 2—159 **8 Claims**



1. Apparatus to enable persons to fix objects to their hand without requiring participation of their fingers, comprising

a body portion constructed of fabric having a roughly quadrilateral outline with a plurality of spaced protrusions along one side, and

first securing means located on one (the outer) surface of said body portion, and

a plurality of straps attached one to each spaced protrusion of said body portion extending in the same direction as the protrusion, and,

second securing means located on one (the inner) surface of each said strap, said second securing means being capable of attachment to said first securing means, and

a patch of material having on its surface a coarser version of said first securing means, fixed to the same surface of said body portion as is said first securing means,

whereby said body portion may be placed with its inner surface against the palm of a persons open hand, then said straps may be passed around the back of the hand and across said body portion, so that through action of said first and second securing means the apparatus will be fixed to the hand with said patch of material both exposed and attached to the persons hand such that objects may be fixed thereon without requiring participation of the fingers.

4,447,913
BELT
David Engelson, Roslyn, N.Y., assignor to Page Accessories, Inc., West Babylon, N.Y.
Filed Jul. 22, 1982, Ser. No. 400,607
Int. Cl.³ A41F *3/02*
U.S. Cl. 2—338 **1 Claim**

1. A belt comprising: an elongated substrate of a stretchable material, a plurality of plates partially overlapping each other on one side of said substrate, and a plurality of connecting means respectively connecting said plurality of plates to said substrate, each of said connecting means having a base on the other side of said substrate, and spaced prongs connected to said base and extending through said substrate and through openings in the respective plate and being bent to lie essentially parallel to said plate to thereby fixedly connect said plate to said substrate, wherein each of said plates has an essentially circular portion and an essentially rectangular portion extending from said essentially circular portion, said openings being provided in said rectangular portion.

4,447,914
GOGGLE
James H. Jannard, Laguna Niguel, Calif., assignor to Oakley, Inc., Irvine, Calif.
Filed Jan. 22, 1982, Ser. No. 341,846
Int. Cl.³ A61F *9/02*
U.S. Cl. 2—432 **3 Claims**

1. In a goggle, the combination comprising

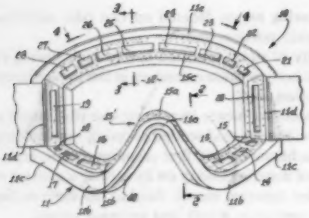
(a) a forwardly facing flexible frame,

(b) a forwardly convex flexible eye protecting lens carried by the frame,

(c) the frame having a ledge located rearwardly of the lens and extending about and adjacent the space immediately rearwardly of the lens,

(d) the ledge having a textured surface to reduce glare of light passing through the lens and incident on said ledge,

said surface inclined relative to the lens to flare forwardly toward and openly face the lens,



(e) said textured surface having upwardly humped extent which is forwardly and downwardly inclined above and laterally of a nose bridge defined by the frame.

4,447,915

EXPANDABLE MEDULLARY CANAL PLUG

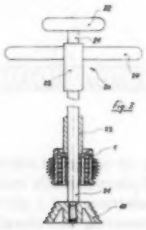
Bernhard G. Weber, St. Gallen, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Feb. 3, 1982, Ser. No. 345,380

Claims priority, application Switzerland, Feb. 18, 1981, 1064/81

Int. Cl.³ A61F 1/04

U.S. Cl. 3—1.9 **14 Claims**



1. A medullary canal plug comprising

a cup-shaped outer body having a base and segmental jacket defining an internal cavity and including at least two segments extending from said base with a plurality of externally disposed deformable anchoring elements on said segments;

a conical expansion body for movement into said cavity of said outer body to spread said segments radially outwardly of said base; and

means for fixing said expansion body within said cavity of said outer body.

4,447,916

MECHANICAL KNEE

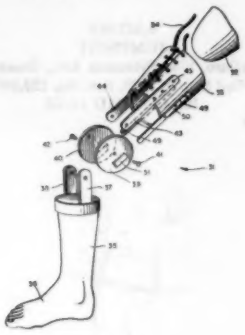
Thomas D. Hall, 821 Hudson Rd., Glenview, Ill. 60025

Filed Aug. 20, 1981, Ser. No. 294,471

Int. Cl.³ A61F 1/04

U.S. Cl. 3—22 **9 Claims**

1. A mechanical knee for extending the upper leg of a user with respect to the lower leg of the user comprising a pulley adapted to be rotatably supported by the lower leg, a collar for attachment to the upper leg, a link attached to the collar and pivotably attached directly to the pulley eccentrically with respect to the axis of rotation of the pulley and extensor means extending between the pulley and the collar for rotating the collar into an extended position with respect to the lower leg



when the pulley is rotated by weight applied to the collar and the link.

4,447,917

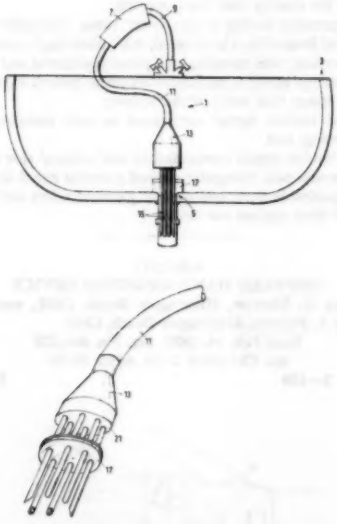
WATER PRESSURE JET CLEANER

Klaus Walter, Priener Str. 28a, 8201 Eggstätt, Fed. Rep. of Germany

Filed Jul. 1, 1982, Ser. No. 394,269

Int. Cl.³ E03D 11/00

U.S. Cl. 4—256 **8 Claims**



1. Water pressure jet cleaner means adapted for relieving clogged sink drains comprising:

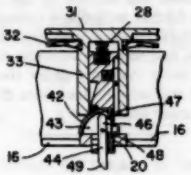
(a) a connecting hose;

(b) a cleaning head coupled to a distal free end of the connecting hose for insertion into a clogged drain;

(c) a clamping device for detachably securing said connecting hose to a water faucet, said clamping device including a pair of clamping segments detachably secured to one another and arranged for axial positioning along said

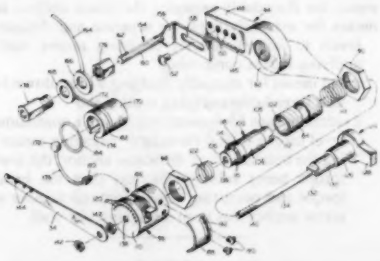
faucet relative to a spirally wound metallic strip and wherein said clamping segments include radially inwardly disposed contact surfaces converging radially outwardly from said clamping device and a pair of pivotally movable levers for generating a radially inwardly directed force against said contact surfaces and thereby against said metallic strip for compressively securing said clamping device to said faucet.

4,447,918
TAMPER-PROOF POP-UP DRAIN FITTING
Casper Cuschera, 1047-77th Ave., Oakland, Calif. 94621
Filed Sep. 27, 1982, Ser. No. 423,535
Int. Cl.³ A47K *1/14*
U.S. Cl. 4—286 **8 Claims**



1. In a pop-up drain fitting including a post threadedly secured to a spider at the lower end of the drain body, the improvement comprising; a detent member pivotally joined to the lower end of the pop-up drain fitting post, said detent member extending gravitally through the nominal plane of the spider, stop member means disposed adjacent to the detent member to prevent rotation of said detent member in only one direction, said detent member being driven to rotate in said one direction by impingement on said spider when said pop-up mechanism is unthreaded from said spider.

4,447,919
FLUSH CONTROL DEVICE
Crescenzo Mobilia, 42 Pine St., Torrington, Conn. 06790
Filed Jun. 18, 1982, Ser. No. 389,672
Int. Cl.³ E03D *1/14, 3/12*
U.S. Cl. 4—325 **7 Claims**



1. A flush control device for selectively operating a toilet tank water discharge valve assembly and the plug thereof in either a full or partial flush mode, comprising (a) an operating mechanism, (b) a restraining arm assembly, and (c) linkage means therebetween; said operating mechanism including:

(1) means for mounting said mechanism on said tank, and having a cylindrical sleeve member for seated engagement within an aperture through a wall of said tank, and a support member for said restraining arm assembly;

(2) an operating cylinder rotatably mounted within said sleeve member, said cylinder having a bore extending axially therethrough, linkage engaging means thereon, and coupling means adjacent the outward end thereof;

(3) an actuating member mounted outwardly adjacent said operating cylinder in said sleeve, said actuating member including a cylindrical bearing portion for supporting said actuating member for rotation and axial shifting in said sleeve between an outward, normal flush mode position and an inward, partial flush mode position, a shaft extending through said bore of said operating cylinder with an end portion projecting beyond the inward end of said cylinder, and coupling means on said actuating member end disposed adjacent said operating cylinder for cooperative turning engagement with said coupling means of said operating cylinder only in said inward position of said actuating member; and

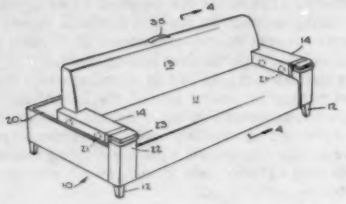
(4) a valve operating arm affixed to said projecting end portion of said shaft for operative connection to the valve assembly for displacement of the valve plug from its seat in the toilet tank;

said restraining arm assembly comprising a valve plug biasing member constructed to engage a moveable part of said valve assembly and to bias the valve plug toward its closed position, said restraining arm assembly being mounted on said support member of said mounting means for pivotable movement from a retracted position, with said operating cylinder in its normal position and with said biasing means withdrawn from the path of movement of the moveable parts of the valve assembly, to an extended position, with said cylinder angularly displaced from said normal position thereof and with said valve biasing member disposed in such path of movement, said biasing member engaging a moveable part of the valve assembly in the course of its movement from the closed to the open position of the valve plug in the extended position of said restraining arm assembly; and said linkage means being engaged with said engaging means of said operating cylinder and operatively connecting said operating cylinder and said restraining arm assembly to transmit turning movement of said cylinder so as to effect pivoting of said restraining arm assembly; whereby, upon rotation of said actuating member, in either said inner or said outer position thereof, said operating arm, connected to the water discharge valve assembly, will displace the valve plug from its seat, and whereby, upon rotation only in said inward position thereof, said actuating member, coupled to said operating cylinder and acting therethrough and through said linkage means, will dispose said biasing means in the path of movement of a part of the valve assembly to engage it and exert a closing force upon the valve plug, said biasing means thereby effecting premature closing of the valve plug and thereby producing a partial flush mode in which the volume of water discharged from the toilet tank is substantially reduced from that which would occur in the full flush mode with the actuating member in its outward position and the restraining assembly withdrawn.

4,447,920
CONVERTIBLE COUCH
Louis M. Rosen, 7 E. 14th St., New York, N.Y. 10003
Filed Jul. 29, 1981, Ser. No. 288,145
Int. Cl.³ A47C *17/00*
U.S. Cl. 5—12 R **5 Claims**

1. A convertible couch assembly adapted to be readily converted from a couch to a bed assembly which comprises a generally horizontal rectangular cushion member which remains generally horizontal during conversion from said couch to said bed assembly and which is suitably supported on stationary legs, a generally upright back member forming a back support section of the couch which remains generally upright during conversion from said couch to said bed assembly, an arm rest attached to each end of said back member and extending forwardly thereof, said arm rest being of a length shorter than the width of said horizontal cushion member, a guide rail disposed at each end of the upper surface of said cushion member and extending generally for the length thereof, roller

means disposed at each end of said couch assembly in the lower portion of said arm rest and upright back member for engagement with the respective guide rail to facilitate rolling of said



upright back member together with said extending arm rest thereby enabling the conversion of said couch to a bed assembly and vice versa, and latch means for locking said back member with respect to said horizontal cushion member.

4,447,921

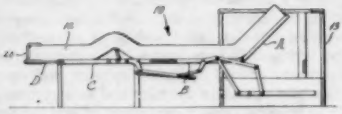
SOFA BED WITH CONTOURED MATTRESS

Julius Greenblatt, 7572 York Dr., Clayton, Mo. 63105

Filed Jun. 17, 1982, Ser. No. 389,411

Int. Cl.³ A47C *17/00*

U.S. Cl. 5—12 R **4 Claims**



1. In an articulated foldable sofa bed construction movable from an extended bed defining position to a folded seat supporting position including relatively movable side frame sections, a fabric stretched between said frame members and connected thereto by spring members, and a mattress supported on said fabric, the improvement comprising a lateral bar extending across the width of the sofa bed construction between opposed side frame members between the fabric and the mattress and having each end connected to one of said side frame members by links which carry the bar from a position recessed between said side frame members to a raised position extending above said side frame members, so as to raise a section of the mattress when said bar is moved to its raised position, said raised mattress section providing support for the knees of the user.

4,447,922

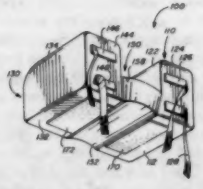
PILLOW APPARATUS

Henry D. Brochu, 4075 N. Tyndall Ave., Tucson, Ariz. 85719

Filed Jan. 22, 1982, Ser. No. 341,879

Int. Cl.³ A47G *9/00*

U.S. Cl. 5—434 **3 Claims**



1. A resilient pillow apparatus, comprising, in combination:

first wing means having a first top surface and a first bottom surface;

second wing means spaced apart from the first wing means and having a second top surface and a second bottom surface;

center means disposed between and secured to the first and second wing means and having a bottom compound concave arch extending upwardly between the first and second wing means and above the first and second bottom surfaces to allow the center means to move downwardly under the weight of a user on the center means, said center means being disposed downwardly from the first and second top surfaces, the first wing means further including a first inner side extending downwardly from the first top surface to the center means, the second wing means further including a second inner side extending downwardly from the second top surface to the center means, the center means further including a convex top arch extending between the first and second inner sides of the first and second wings, respectively, whereby the first and second wing means move inwardly under the weight of a user with the first and second inner sides disposed against the user on the center means.

4,447,923

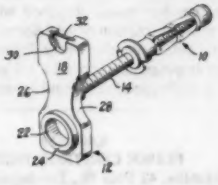
SETTING TOOL FOR WALL ANCHOR

Michael E. Bond, Topton, and Harry E. Taylor, Wyomissing, both of Pa., assignors to USM Corporation, Farmington, Conn.

Filed Dec. 30, 1981, Ser. No. 335,865

Int. Cl.³ B25B *15/00*

U.S. Cl. 7—165 **11 Claims**



1. A tool for setting a screw anchor, within a wall, said tool comprising:

means for threadably engaging the screw anchor; and

means for manually applying separate and distinct torque levels to said threadably engaging means, said torque applying means comprising;

a first means for manually applying a breakdown torque to said threadably engaging means; and

a second means for manually applying a continuous lower level torque to said threadably engaging means following the breakdown of the screw anchor, the lower level torque being substantially less than the break-down torque and occurring in a continuous manner until the screw anchor has been set against the wall.

4,447,924

MOISTURE CONTROL SYSTEM FOR CONTROLLING THE AMOUNT OF CHEMICAL ADDED TO A FABRIC

Joseph A. Bolton, Queensbury, N.Y., and George R. Feehery, Waleska, Ga., assignors to Albany International Corp., Menands, N.Y.

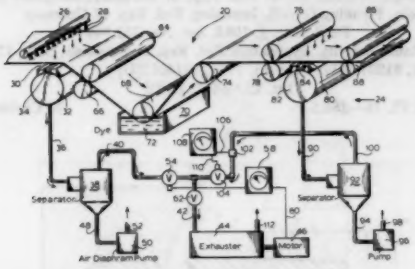
Filed Feb. 18, 1982, Ser. No. 350,086

Int. Cl.³ D06B *15/04, 21/00, 23/28*

U.S. Cl. 8—151 **27 Claims**

1. A moisture control system for controlling the amount of chemical added to a fabric composition comprising: vacuum means capable of applying a vacuum to fabric passing thereby; conduit means connected to the vacuum means, a source of

liquid including a predetermined percentage of chemical therein to be added to the fabric; means for applying liquid from the liquid source to the fabric; means for advancing the fabric containing liquid from the liquid source passed the vacuum means whereupon vacuum is applied thereto to deliquefy the fabric; the vacuum means being calibrated to provide a predetermined amount of vacuum which leaves a predetermined percentage of moisture in the fabric and accordingly a



predetermined percentage of chemical in the fabric with the predetermined amount of vacuum being a function of the predetermined percentage of chemical in the liquid and the composition of the fabric; sensing means for sensing a change in the vacuum and the vacuum means being responsive to the change sensed by the sensing means to adjust the vacuum and return it to the predetermined vacuum thereby maintaining a constant moisture level and accordingly amount of added chemical in the fabric.

4,447,925

SLUICE APPARATUS FOR CLEANING THE INTERIOR OF PIPES

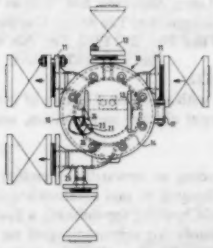
Erich O. Riedel, Haan, Fed. Rep. of Germany, assignor to Firma Alfred Gutmann GmbH and Co., Hamburg, Fed. Rep. of Germany

Filed Mar. 31, 1982, Ser. No. 364,196

Claims priority, application Fed. Rep. of Germany, Apr. 1, 1981, 3112968

Int. Cl.³ F28G *1/12*

U.S. Cl. 15—104.06 A **4 Claims**



1. A sluice apparatus for dosed introduction of rubbing elements into, and removal from, a liquid-carrying pipeline, comprising:

a drum-shaped collecting vessel interposable into the pipeline having a flow inlet valve and a flow outlet valve in the upper portion thereof for establishing a continuous flow therethrough, said drum-shaped collecting vessel also having a catcher valve in the lower portion thereof; and

a catcher basket with side plates having a multiplicity of apertures formed therein arranged inside said vessel above said catcher valve in spaced relation from the inside wall of said vessel so that said rubbing elements enter said catcher basket from said flow inlet valve.

4,447,926

PIPE CLEANING MACHINE HAVING A CONTAINER TO ACCOMMODATE CLEANING SPIRALS OF VARIOUS DIAMETER

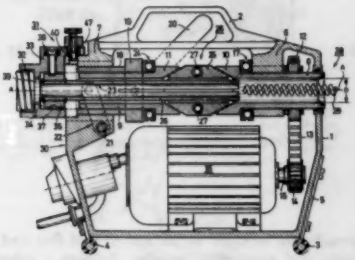
Günter Rothenberger, Bad Homburg, Fed. Rep. of Germany, assignor to Rothenberger GmbH & Co., Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 11, 1982, Ser. No. 356,985

Claims priority, application Fed. Rep. of Germany, Mar. 14, 1981, 3119876

Int. Cl.³ B08B *9/02*

U.S. Cl. 15—104.3 SN **6 Claims**



1. In a pipe cleaning machine for rotating cleaning spirals of various outside diameters, the machine having a guide-hose container having a passage therethrough for passing the cleaning spiral, a coupling for releasably coupling the guide-hose container to the machine having a passage therethrough for passing the cleaning spiral, at least one hollow-shaft portion having a passage therethrough for passing the cleaning spiral from the coupling through the machine to a free end of the cleaning spiral for cleaning use, a rotationally-driven rotary clutch having jaws defining a passage therethrough aligned with the hollow-shaft portion and movable radially into the passage for passing the cleaning spiral, and means for moving the rotary clutch jaws radially into the passage therethrough, whereby to rotationally drive the cleaning spiral therein, the improvement comprising:

means in the guide-hose container, coupling, hollow-shaft portion, and rotary clutch for defining the inside diameter of the passages therethrough to be at least as large as the largest outside diameter of the cleaning spirals to be used with the machine, whereby at least the guide-hose container does not have to be changed with the cleaning spirals of various outside diameters; and

means in the coupling for releasably mounting a rotatable collet therein, whereby the collet adapts the hollow-shaft portion and rotary-clutch jaws for cooperation with at least one of the cleaning spirals smaller than the one of largest outside diameter and is the only accessory needed therefor.

4,447,927

GUTTER CLEANING APPARATUS

George C. Malless, Jr., 9 Tynewick Ct., Silver Spring, Md. 20906

Filed Sep. 2, 1982, Ser. No. 414,513

Int. Cl.³ E04D *13/06*

U.S. Cl. 15—236 R **19 Claims**

1. Apparatus for cleaning leaves and other debris from overhead building gutters, said apparatus comprising:

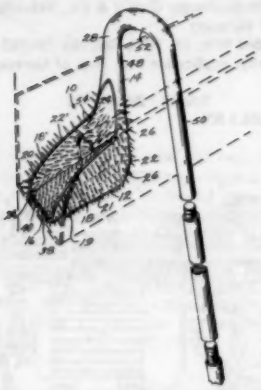
a scoop-shaped body defining first and second ends, a bottom portion and side portions, and defining an interior

surface and outer surfaces of said side and bottom portions;

a first plurality of spike-like projections extending from said interior surface;

a second plurality of spike-like projections extending from said outer surfaces of said side portions;

a third plurality of spike-like projections extending from said outer surface of said bottom portion;



an attachment member connected to said first end of said body, said attachment member defining a substantially inverted U-shaped configuration having a free end positioned adjacent to a side portion of said body; and

at least a first pole defining first and second free ends, said first end of said pole and said free end of said attachment member constructed to be removably connected to each other.

4,447,928

WINDSHIELD WIPER ARRANGEMENT

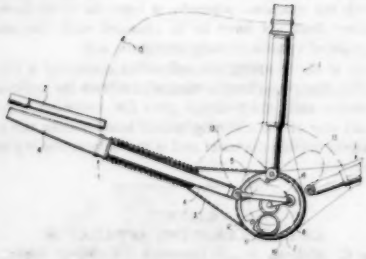
Siegmund Schüch, Boeblingen; Karl-Heinz Nägele, Gaertringen; Arno Jambor, Vaihingen, and Bruno Sacco, Sindelfingen, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Jun. 30, 1982, Ser. No. 393,704

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1981, 3125628

Int. Cl.³ B60S *1/26*

U.S. Cl. 15—250.21 **9 Claims**



1. A windshield wiper arrangement for a motor vehicle comprising telescopic windshield wiper arm means having a lower portion and an extendable upper portion, crank drive means for displacing the extendable upper portion so as to vary an effective length of the wiper arm means during a wiping motion thereof, driving means for driving the crank drive means including a toothed gearing means, wherein the lower portion is constructed as a housing means for accommodating the toothed gearing means and crank drive means and wherein the windshield wiper arm means and crank drive means have a common axis of rotation.

4,447,929

SCRAPER DEVICE AND ASSEMBLY TOOL

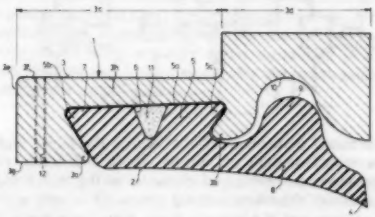
Kurt Hennig, Munich; Manfred Klein, Ismaning, and Matthias Nuspl, Munich, all of Fed. Rep. of Germany, assignors to Gebr. Henning GmbH, Ismaning, Fed. Rep. of Germany

Filed Mar. 1, 1982, Ser. No. 353,345

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1981, 8107714[U]; May 13, 1981, 8114012[U]

Int. Cl.³ F16C *29/08*

U.S. Cl. 15—256.5 **14 Claims**



1. In a machine tool scraper device of the kind adapted for use with guideways and the like and having an elastically deformable scraper element provided with a scraper lip and an anchoring extension, said device also including a support element formed of rigid material having a recess in which said scraper element is accommodated, the improvement wherein said anchoring extension has a groove therein enabling elastic deformation of said scraper element by compression of said groove to enable insertion of said scraper element into said recess of said support element, the elasticity of said scraper element enabling the latter to expand into a form locking fit in said recess, said scraper element having a reinforcing rib between said scraper lip and said anchoring extension.

4,447,930

POWER HEAD UNIT FOR CARPET CLEANING

William K. Glenn, III, Anderson; John E. Jones, Greenville; Gordon E. Laing, Anderson, and William R. Sumerau, Easley, all of S.C., assignors to The Singer Company, Stamford, Conn.

Filed Dec. 27, 1982, Ser. No. 453,363

Int. Cl.³ A47L *11/00*

U.S. Cl. 15—322 **24 Claims**

12. For use with an external source of vacuum, a power head unit for a carpet cleaner and vacuum, said power head unit comprising:

a housing;

means including an upwardly extending wand for connecting said housing to said external source of vacuum;

means in said housing for defining a brush chamber, a vacuum chamber for communication on one end with said brush chamber and on the other end with said connecting means, and a powder retaining chamber for retaining a quantity of a dry chemical carpet cleaning material therein;

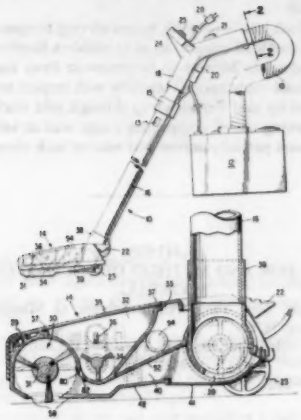
a brush rotatably supported by said housing for contact with a carpet, said brush comprising bristles and a substantially circular brush roll supporting said bristles offset from the centerline of said brush roll so that in a first direction of rotation said bristles resiliently sweep over said carpet toward said vacuum chamber with a first force and in a second direction of rotation said bristles resiliently sweep against said carpet with a second force higher than said

first force for agitating dry chemical carpet cleaning material into said carpet to perform a cleaning function;

means for selectively reversibly rotating said brush;

said housing further supporting means for selectively dispensing said dry chemical cleaning material onto said carpet;

means supported by said wand for selecting between a vacuum mode of operation and a carpet cleaning mode of operation in which said dispensing means is selectively effective;



a least one slot in said powder retaining chamber adjacent said brush chamber and extending therealong;

means for selectively covering said at least one slot;

means on said powder retaining chamber adjacent said at least one slot for facilitating dispensing of said dry chemical cleaning material through said at least one slot when said covering means is actuated to uncover said at least one slot.

4,447,931

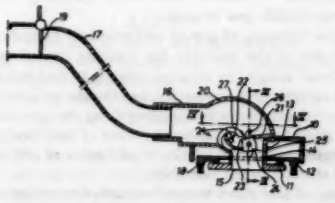
REMOTELY CONTROLLED VACUUM CLEANER NOZZLE

Lennart S. A. Lindqvist, Sundbyberg, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

Continuation-in-part of Ser. No. 212,350, Dec. 3, 1980, abandoned. This application Dec. 6, 1982, Ser. No. 447,165

Int. Cl.³ A47L *9/06*

U.S. Cl. 15—365 **7 Claims**



1. In a suction nozzle attached to a suction conduit of a vacuum cleaner and provided with a brush nozzle and a flat surface nozzle, both of which are working members, and can be alternately brought into engagement with the work surface by means of an actuating member, the improvement comprising: said actuating member being a valve mounted on said suction conduit remote from said nozzle which is movable between two end positions to change the pressure conditions in said conduit to either open or close said suction conduit, and a movable blocking element adapted to be mounted in said nozzle to normally close the suction channel of said nozzle, and during the opening of said suction channel by said valve to move to a position whereby said suction channel is opened, and means responsive to movement of said element to its open position to cause one of said working members to move away from said work surface while the other of said working members moves into contact with said work surface due to the substantially unrestricted negative pressure generated in said suction conduit.

4,447,932

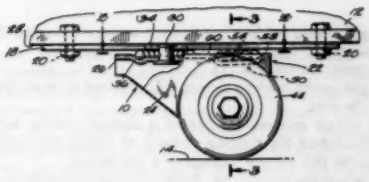
CASTER INCLUDING ON CENTER BEARING ARRANGEMENT

Ralph W. Mueller, Waukesha, Wis., assignor to E. R. Wagner Mfg. Co., Hustisford, Wis.

Filed Jan. 22, 1982, Ser. No. 341,839

Int. Cl.³ B60B *33/00*

U.S. Cl. 16—21 **5 Claims**



1. A caster including

a support plate member having a lower surface,

a yoke adapted to support said support plate, said yoke including

a pair of spaced apart downwardly extending legs, said legs including upper ends and lower ends, said lower ends having aligned bores,

a horizontal plate member joining the upper ends of said legs, said plate member having an upper surface in closely adjacent generally parallel spaced relation with respect to said lower surface of said support plate,

means for pivotably joining said plate member to said support plate for free rotation about a generally vertical axis,

an axle supported in said aligned bore, said axle being spaced laterally from said generally vertical axis such that said means for pivotally joining said plate member to said support plate is positioned laterally of said axle,

at least one wheel rotatably supported on said axle,

a first ball bearing assembly surrounding said means for pivotably joining, said first ball bearing assembly including a bearing race formed in one of said lower surface of said support plate and said upper surface of said horizontal plate member, said bearing race surrounding said generally vertical axis, and a plurality of balls housed in said race, and

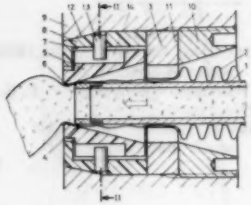
a second ball bearing assembly including a bearing race spaced laterally from said first ball bearing assembly bearing race such that said first ball bearing assembly bearing race is positioned outside of said second ball bearing assembly bearing race, said second ball bearing assembly bearing race being formed in one of said lower surface of said support plate and said upper surface of said horizontal plate member and having a first race portion spaced laterally from said first ball bearing assembly and being positioned above said axle, said first race portion being arcuate and having as a center of curvature said generally vertical axis, and said first race portion housing a plurality of balls for transferring weight from said support plate to said yoke, to said axle, and to said wheel.

4,447,933

GUT CASING HOLDING NOZZLE FOR A SAUSAGE FILLING MACHINE

Ulf Spiegelberg, Niederwil, Switzerland, assignor to C. Hoegger & Cie. AG., Gossau, Switzerland

Filed Mar. 26, 1982, Ser. No. 362,197
Claims priority, application Switzerland, Apr. 13, 1981, 2448/81
Int. Cl.³ A22C *11/00*
U.S. Cl. 17—41 5 Claims



1. A gut casing holding nozzle for a sausage filling machine, comprising:

(a) a rotatable fill tube (1),

(b) a gut casing holding element (4) attached to an outlet end of the tube,

(c) a nozzle member (5) having a conical interior surface surrounding the holding element to define therewith an annular slot for the passage of a gut casing,

(d) a mounting member (8) disposed surrounding the nozzle member and defining a cylindrical gap (7) therebetween,

(e) at least two spaced cavities (14) defined in the outer surface of the nozzle member, and

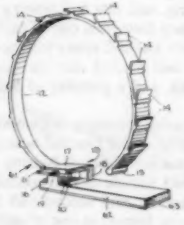
(f) at least two anchoring pins (13) extending inwardly from the mounting member and loosely disposed in the nozzle member cavities, whereby the nozzle member is "float mounted" within the mounting member with a predetermined degree of both radial and axial play to thereby enable the nozzle member to automatically center itself during operation to compensate for fill tube bends, casing irregularities, and the like.

4,447,934

CABLE HARNESS

Bernard Anscher, Woodbury, N.Y., assignor to National Molding Corporation, Farmingdale, N.Y.

Filed Jun. 7, 1982, Ser. No. 386,098
Int. Cl.³ B65D *63/10*
U.S. Cl. 24—16 PB 10 Claims



1. A cable harness comprising: a flexible strap having a ratchet lock and a plurality of ratchet engaging members disposed thereon so as to define therebetween operative strap lengths corresponding to different workpiece bundle sizes,

said ratchet lock having a channel orientated in the longitudinal direction of said flexible strap and sized to permit the passage of said flexible strap therethrough in said longitudinal direction only,

said channel having a plurality of ratchet teeth disposed therein to engage said ratchet engaging members on said flexible strap when in operation, said flexible strap is moved through said channel to tighten said cable harness about a bundle and to restrain, by virtue of that engagement, the movement of said flexible strap in a cable harness loosening direction while permitting movement in the tightening direction, thereby locking said cable harness, and

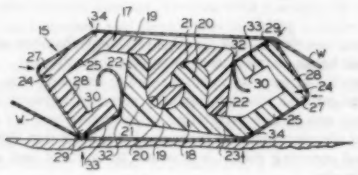
a ratchet lock lateral opening means serving to open a side of said ratchet lock channel so as to enable a flexible strap of a locked cable harness to be removed from the ratchet lock of said cable harness laterally with respect to the path travelled by said flexible strap through said ratchet lock, said opening means comprising a side wall or tab extending at least partially across said ratchet lock channel side.

4,447,935

DEVICE FOR AND METHOD OF JOINING SHEET MATERIAL

Steven Ausait, New York, N.Y., assignor to Minigrip, Inc., Orangeburg, N.Y.

Filed Feb. 25, 1982, Ser. No. 352,320
Int. Cl.³ A44B *17/00, 21/00*
U.S. Cl. 24—201 C 24 Claims



1. Two margins on substantial expanses of sheet material and a device for mechanically joining the margins, and comprising:

said device having a pair of complementary extruded plastic, elongated separable fastener members each of which has a body provided with complementary resilient rib and groove fastener means adapted for separable interlocking for maintaining said members in a separable fastener assembly;

and each of said members having integrally on and along its body, and laterally spaced from said fastener means a respective releasable sheet-margin-gripping resiliently manipulatable jaw structure;

said jaw structure of one of said members extending along one side of the assembly for retaining one of said sheet material margins in attached relation to said one member and thereby to the assembly, and the jaw structure on the other of said members extending along the opposite side of the assembly for retaining the other of said sheet material margins in attached relation to said other of said members and thereby to the assembly;

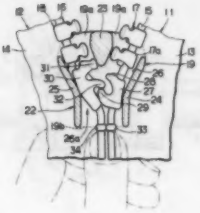
and one of said sheet material expanses extending from its margin retained in one of said jaw structures and in partially wrapping relation across said assembly and into grip-enhancing thrusting relation to the other of said jaw structures, and the other of said sheet material expanses extending from its margin retained in said other of said jaw structures and in partially wrapping relation across said assembly and into grip-enhancing thrusting relation to said one jaw structure.

4,447,936

SLIDE FASTENER WITH SEPARABLE BOTTOM END STOP

Masahiro Kusayama, Kurobe, Japan, assignor to Yoshida Kogyo K K, Tokyo, Japan

Filed Oct. 13, 1981, Ser. No. 310,380
Claims priority, application Japan, Nov. 1, 1980, 55-156533
Int. Cl.³ A44B *19/36*
U.S. Cl. 24—433 **6 Claims**



1. A slide fastener comprising:

(a) a pair of stringers having interlocking fastener elements carried on a pair of first and second marginal beads thereof;

(b) a slider cooperable with said fastener elements to interlock and to disengage them in response to opposite directions of movement along said pair of stringers, said slider having a pair of flaring flanges;

(c) a separable bottom end stop including a pair of first and second members mounted on said first and second beads, respectively, adjacent to the lowermost fastener element for being interlocked with one another; and

(d) a pair of register marks disposed one on each of said pair of stringers and spaced from said first and second members to such an extent that said register marks are disposed below a rear end of said slider at the beginning of interlocking of said first and second members within said slider upon threading of said pair of stringers through said slider, said register marks being aligned with one another transversely of said stringers when said first and second members are registered with one another for correct interlocking, said register marks being so spaced from said first and second members that said register marks are aligned with one another and with the rear end of said slider only after said first member is threaded through said slider until it reaches the correct position to interlock with said second member after said second member has been threaded through said slider to a correct position for interlocking with said first member.

4,447,937

WEB EDGE DECURLING DEVICE

William O. Young, Jr., Spartanburg, S.C., assignor to Young Engineering, Inc., Spartanburg, S.C.

Filed Jun. 12, 1981, Ser. No. 273,084
Int. Cl.³ D06C *25/00*
U.S. Cl. 26—98 **28 Claims**

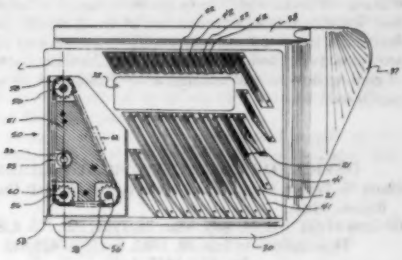
1. A device for removing curl, folds and the like from an edge of a moving web comprising:

(a) a top plate, said plate having a plurality of elongated fins associated therewith, said fins being disposed at an angle to an edge of a web traveling thereby, said fins having a smooth angled edge for contact with said web;

(b) a bottom plate, said bottom plate having a plurality of elongated fins associated therewith, said fins being disposed at an angle to an edge of a web traveling thereby, said fins having a smooth angled edge for contact with said web;

(c) means to associate said top and bottom plates whereby said top and bottom fins define a web passageway therebetween; and

(d) means for positionally adjusting the fins associated with the top plate relative to the fins associated with the bottom plate, said means comprising a plurality of adjustment members received between said plates, said members being operatively associated with one of said plates for movement toward and away from said plate and contactable with the other of said plates, said members being interrelated for simultaneous movement, one of said members extending from between said plates and having means associated therewith for manual movement of same, other of said members being located entirely between said plates; whereby movement of said one of said members will cause like movement of the other of said members to positionally adjust said fins.

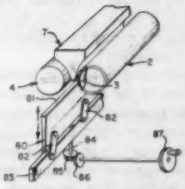


4,447,938

METHOD AND APPARATUS UTILIZING AN IMPACT BLADE FOR THE COMPRESSIVE TREATMENT OF FABRIC

Frank Catallo, 84 Wheatley Rd., Old Westbury, N.Y. 11568

Division of Ser. No. 195,301, Oct. 8, 1980, Pat. No. 4,363,161, which is a continuation-in-part of Ser. No. 095,090, Nov. 16, 1979, abandoned. This application Apr. 14, 1982, Ser. No. 368,202
Int. Cl.³ D06C *21/00*
U.S. Cl. 26—18.6 **4 Claims**



1. An apparatus for the compressive treatment of a fibrous material where the apparatus comprises a first movable surface, means for moving said first movable surface in a first direction at a first rate of speed, a second movable surface spaced from said first movable surface, means for moving said second movable surface in a second direction opposite to said first direction at a second rate of speed slower than said first rate of speed, a confining means spaced from said first and second movable surfaces having an apex extending between and towards said surfaces to form a stuffing chamber therewith into which material is adapted to be moved by said first movable surface and from which material is adapted to be moved by said second movable surface, and an impact blade extending between said first and second movable surfaces towards said apex for guiding flow of said material around said apex.

4. A method for the compressive treatment of a fibrous web

material where said material is forced into a stuffing chamber formed by a space between a first movable cylindrical surface, a second movable surface, an apex of a confining means extending in part between and spaced from the first and second surfaces, and an impact blade extending between the first and second movable surfaces towards said apex, comprising the step of moving the first surface at a first rate of speed in a first direction to move said material between it and said confining means towards and into said stuffing chamber, the step of moving the second surface in a second direction opposite to said first direction at a second rate of speed slower than said first rate of speed to move said material in said second direction around said apex and out of said stuffing chamber, and the step of guiding flow of said material around said apex by said impact blade.

4,447,939

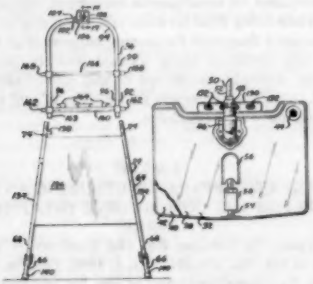
DEVICE FOR COLLECTING BODY LIQUIDS

Glenn N. Taylor, Cary, Ill., assignor to The Kendall Company, Boston, Mass.

Division of Ser. No. 247,499, Mar. 25, 1981, Pat. No. 4,393,880. This application Sep. 29, 1982, Ser. No. 426,515

Int. Cl.³ A61F *5/44*

U.S. Cl. 128—760 **25 Claims**



1. A device for collecting body liquids, comprising:

a receptacle having upper and lower portions, said receptacle having a chamber to receive and collect body liquids;

a stand having a back member having upper and lower portions, and leg means extending from the lower portion of said back member;

means for connecting the upper portion of the stand to the upper portion of the receptacle to support the receptacle in an upright position by the stand, wherein the leg means comprises a pair of legs and including means for pivotally mounting the legs to a lower portion of the back member, wherein the legs are movable between a first forward position to support the receptacle, and a second inner position with the legs being generally aligned with a central portion of the back member, with said legs being in a configuration with one of the legs overlying the other of the legs.

4,447,940

REVOLVING HOLLOW ROLL WITH A GAP SEAL

Valentin Appenzeller, Kempen, and Peter F. Mingers, Willich-Anrath, both of Fed. Rep. of Germany, assignors to Eduard Küsters, Krefeld, Fed. Rep. of Germany

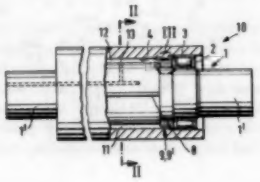
Filed Dec. 9, 1981, Ser. No. 329,007

Claims priority, application Fed. Rep. of Germany, Jul. 16, 1981, 3128140

Int. Cl.³ B21B *13/02*

U.S. Cl. 29—116 AD **9 Claims**

1. In a roll with a revolving hollow roll forming the working roll circumference and a stationary cross head which extends through the hollow roll lengthwise spaced a distance from the inside circumference of the hollow roll on all sides, to which cross head external forces can be applied at the ends protruding from the hollow roll, the hollow roll braced against the cross head via a pressure liquid in a chamber which is formed in the space between the hollow roll and the cross head, said space provided with a feed line and divided by a sealing arrangement which is mounted at the cross head and comprises



strip-shaped longitudinal seals extending along the cross head on both sides of the action plane of the roll, as well as transverse end seals provided at the ends of the chamber arranged opposite each other along the cross head and the hollow roll, the improvement comprising, each of the transverse end seals being in the form of a gap seal having opposed gap surfaces and a separate precision antifriction bearing for keeping the gap surfaces of said gap seal spaced regardless of flexure of the cross head and the hollow roll.

4,447,941

DEWATERING ROLL OF A WIRE PRESS

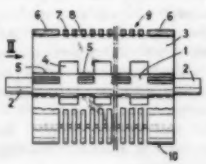
Hans Schnell, Mengen, and Rolf Wenske, Ravensburg-Torkenweiler, both of Fed. Rep. of Germany, assignors to Escher Wyss GmbH, Ravensburg, Fed. Rep. of Germany

Filed May 3, 1982, Ser. No. 373,848

Claims priority, application Switzerland, May 11, 1981, 3026/81

Int. Cl.³ A01B *29/00*

U.S. Cl. 29—121.1 **8 Claims**



1. A dewatering roll for a wire press comprising:

a substantially cylindrical roll shell provided with at least one outflow opening for expressed liquid;

substantially radially extending arm members for supporting said roll shell;

said radially extending arm members being formed by support walls extending essentially axially along essentially the entire length of the roll shell;

said roll shell being provided with at least one gap forming said outflow opening;

said gap piercing the wall thickness of the roll shell along at least a portion of its extent and providing said outflow opening;

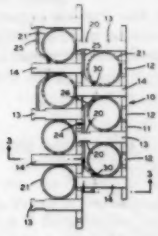
said roll shell possesses a plurality of gaps extending in the circumferential direction of the roll shell and defining a plurality of throughflow openings for the expressed liquid; and

said plurality of circumferentially extending gaps imparting to the roll shell the shape of coaxial ring members which extend essentially parallel to one another.

4,447,942
HELICAL STEAM GENERATOR TUBE SUPPORT

Felix S. Jabsen, Lynchburg, Va., assignor to The Babcock & Wilcox Company, New Orleans, La.

Division of Ser. No. 192,775, Oct. 1, 1980, Pat. No. 4,337,827.
This application Apr. 15, 1982, Ser. No. 368,790
Int. Cl.³ B23P 15/26; F28F 9/00
U.S. Cl. 29—157.4 2 Claims



1. A method of assembling a support structure for a heat exchanger having helically coiled tubes comprising the steps of:

a. providing a plurality of longitudinally extending generally flat support plates having support members affixed to the longitudinal edges thereof and extending perpendicular from the plane thereof, the support members being longitudinally spaced to accept and nest the helically coiled tubes there between, the support plates being notched to mate with the support members of an adjacent plate, a plurality of spring plates, alternating successive support members having recesses to accept the edges of said spring plates, said spring plates being sized to engage said recesses of said alternating support members and having notches to accommodate remaining members and having generally flat portions separated by a corrugation,

b. positioning a first set of said plurality of support plates vertically extending and radially distributed about the center of the steam generator;

c. helically winding the heat exchanger tubing to nest between support members of said first set of plates;

d. positioning each of said plurality of springs by inserting a first spring edge in a pair of said recesses, snapping an opposing spring edge into an opposing pair of said recesses such that said corrugaton runs parallel to and bears against a pair of said plurality of tubes;

e. positioning a second set of support plates such that the notches thereof mate with the support members of said first set of support plates;

f. compressing said second set of plates to said first set of plates to compress said spring to a desired pressure;

g. affixing the support members of said first set of support plates to the notches of said second set of support plates; and

h. repeating steps c through g with a number of successive sets of support plates until the heat exchanger is fully assembled.

4,447,943
PROCESS OF MAKING MEDICAL CLIP

Robert M. Baucom, Carrollton, Va., assignor to United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Division of Ser. No. 264,381, May 15, 1981, abandoned. This application Feb. 10, 1983, Ser. No. 465,363
Int. Cl.³ B23P 17/00
U.S. Cl. 29—423 3 Claims

1. A method of making an essentially X-ray transparent medical clip for use in treating aneurisms and the like in a living animal comprising the steps of:

providing a graphite fiber/resin composite film material;

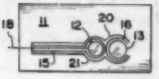
providing a mold stand having a pair of elongated cylinders disposed in spaced relationship and extending vertically therefrom;

wrapping a first length of the composite film around one of the elongated cylinders with the end portions of the film being trimmed so as to be spaced from each other and with this spacing provided on the diametrically opposed surface of the cylinder adjacent to the other cylinder;

wrapping a second length of the composite film around the other of the elongated cylinders with the end portions of the film exceeding the cylinder diameter and positioned so as to extend a distance away from the cylinder pair;

providing an inert separator film between the end portions of the second length of composite film to avoid film adherence along this length;

positioning at least one pair of additional lengths of the composite film in abutting relationship with and extending



ADDITIONAL COMPOSITE PLY OR PLIES ARE PLACED OVER THE FIRST PLIES;

VACUUM BAG, AUTOCLAVE AT ~ 300 PSI PRESSURE AND 600°F FOR 30 MINUTES TO CURE THE COMPOSITE MATERIAL. THE ANEURISM CLIP IS THEN REMOVED AND TRIMMED TO DESIRED SIZE.

one each from the spaced ends of the first length of composite film to the ends of the second length of composite film;

positioning the mold stand in a vacuum bag at approximately 26 mm Hg and autoclaving the bagged assembly at approximately 600° F. and 300 psi pressure for approximately 30 minutes to cure the composite assembly into a unitary molded structure;

cooling and removing the molded structure from the elongated cylinders to recover a clip structure having a spaced opening at one end and elongated abutting jaws at the opposite end;

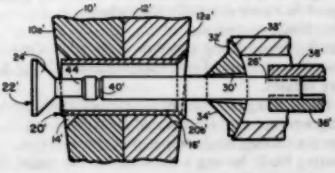
removing the inert separator film from the abutting jaws of the molded structure and trimming the molded structure to the desired dimensions; and

inserting a silicone rubber pellet in the spaced open end of the molded structure to thereby exert a spring force on the structure and bias the abutting jaws at the opposite end in pressure contact with each other for use as a medical clip.

4,447,944
METHOD OF FORMING A TUBULAR RIVET IN FASTENING RELATION TO A PLURALITY OF LAMINATES

Robert H. Mohrman, Bridgeton, Mo., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 16, 1982, Ser. No. 389,138
Int. Cl.³ B21D 39/00; B23P 11/00
U.S. Cl. 29—512 1 Claim



1. A method for forming a tubular rivet in fastening relation

to a plurality of laminates one or both of which is tapered in thickness and through which laminates a rivet hole extends having first and second countersinks the axes of which are at small angles to the axis of said rivet hole, the method comprising the steps of:

providing in said hole a tubular rivet at least one end of which is unformed and the other end of which has a partially formed conical rivet head;

providing a forming mandrel having a head presenting a first conical forming surface adjacent said unformed end and having a shaft extending through the lumen of said rivet;

providing an annular anvil having a central bore through which said shaft extends and presenting a second conical forming surface to said partially formed conical rivet head;

said shaft being bendable adjacent said mandrel head and said bore of said anvil being tapered to permit tilting of said anvil relative to said shaft; and

forcefully moving said mandrel head and said anvil toward one another so as to flare said one end and further flare said other end to form first and second conical rivet heads the axes of which are substantially coaxial with said axes of said countersinks.

4,447,945

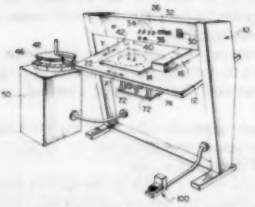
CUT AND CLINCH MECHANISM FOR USE IN ELECTRICAL COMPONENT ASSEMBLY APPARATUS

Istvan Priscsak, New Fairfield, Conn., assignor to Contact Systems, Inc., Danbury, Conn.

Continuation of Ser. No. 145,794, May 1, 1980, abandoned. This application Aug. 26, 1982, Ser. No. 411,677

Int. Cl.³ H05K *3/30*

U.S. Cl. 29—566.3 **14 Claims**



1. A mechanism for cutting and clinching a terminal lead of an electrical component that extends downwardly from a circuit board onto which the component is mounted, said mechanism being below the board and comprising

a rigid finger obliquely inclined to the bottom surface of said circuit board and having an end positionable adjacent said bottom surface of the board,

an aperture extending transversely through said finger at or adjacent its end for receiving a thin lead of an electrical component that extends downwardly from the bottom surface of said board,

the outer rim of said aperture comprising a cutting edge,

a cutting sleeve coaxially disposed on said finger and adapted to rotate coaxially thereabout,

a cutting blade on said sleeve,

said cutting blade being positioned on said sleeve to wipe across the outer rim of said aperture in the finger when the sleeve rotates,

means for rotating said sleeve coaxially around said finger,

whereby a component lead in said aperture is cut or sheared when the cutting blade wipes past the aperture,

said cutting blade having a thickness in the radial direction of the finger sufficient to engage the remaining end of the lead after it has been cut to bend said remaining end toward the circuit board as the cutting sleeve rotates further after the lead is cut.

4,447,946

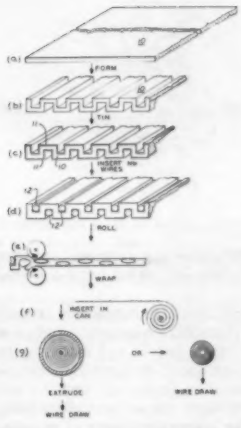
METHOD OF FABRICATING MULTIFILAMENT INTERMETALLIC SUPERCONDUCTOR

William G. Marancik, Basking Ridge, N.J., assignor to Airco, Inc., Montvale, N.J.

Continuation of Ser. No. 74,186, Sep. 10, 1979, abandoned. This application Jul. 13, 1981, Ser. No. 282,832

Int. Cl.³ H01L *39/24*

U.S. Cl. 29—599 **6 Claims**



1. A method of making a superconducting wire of the type in which a predetermined number of fine filaments of intermetallic superconductor having the composition A_3B and the A-15 crystal structure are embedded in a matrix of normal conductor which comprises distributing wires of A having a nominal diameter not greater than 0.050 inch in a body consisting of Cu and interspersed B material, the B material being provided as a coating on Cu stock having a cross sectional dimension in one direction not greater than the diameter of the wires of A, mechanically working the composite to reduce its cross section to the desired final wire diameter with concomitant elongation, and heating treating the conductor to cause the dispersed B material to diffuse into the Cu and to migrate to and react with the A material filaments to form filaments of A_3B.

4,447,947

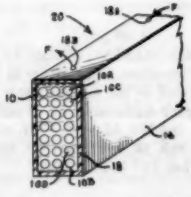
PROCESS FOR MAKING FLUID-COOLED ELECTRICAL CONDUCTOR

Fred B. McCarty, San Pedro, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Division of Ser. No. 206,413, Nov. 13, 1980, abandoned. This application Feb. 9, 1983, Ser. No. 465,214

Int. Cl.³ H01R *43/00*

U.S. Cl. 29—825 **15 Claims**



15. A method of making an electrical conductor capable of being fluid cooled, comprising the steps of:

a. encapsulating a stranded wire electrically conductive member of predetermined length in a material having characteristics of good adhesion, flexibility, and removability, thereby forming a matrix in which said stranded electrically conductive member is contained and supported;

b. inserting said matrix into a tube of insulating material, thereby creating a member of insulating material which surrounds said matrix and said electrically conductive member in said matrix;

c. providing openings through said insulating member for passage therethrough of an insulating coolant fluid; and

d. removing said matrix material from said electrically conductive member and from said insulating member.

4,447,948

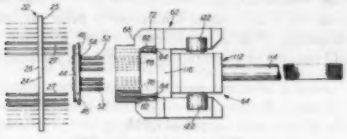
TECHNIQUE FOR INSERTING KEYING MEMBERS INTO BACKPLANES

Stanley Golinski, Proviso Township, Cook County, Ill., and Willard E. Rapp, Franklin Township, Somerset County, N.J., assignors to AT & T Technologies, Inc., New York, N.Y.

Filed Apr. 1, 1982, Ser. No. 364,567

Int. Cl.³ H05K *3/00*

U.S. Cl. 29—829 **7 Claims**



1. A method of inserting a plurality of keying members, each member comprising a planar base with a plurality of keys projecting therefrom and a plurality of first openings, onto a backplane having a multitude of connector pins therethrough, the method comprising the steps of:

inserting the keys of the keying members into second openings in a transfer member;

positioning the transfer member proximate the backplane; and

sequentially urging keying members from the transfer member onto pins in the backplane whereby said pins are inserted at least in some of said first openings.

3. Apparatus for inserting a plurality of keying members, each member comprised of a planar base with a plurality of keys projecting therefrom, into a backplane having a multitude of connector pins therethrough, said backplane forming the back wall of a PCB mounting shelf, said shelf having a plurality of parallel tracks therein which are normal to the backplane, the apparatus comprising:

a transfer means adapted to receive the keys of each of the keying members;

means for positioning the transfer means within the mounting shelf, proximate the backplane; and

means, slidably mounted on the transfer means, for sequentially ejecting groups of keying members from the transfer member onto pins in the backplane.

4,447,949

WIRE STRIPPER

Michael W. Kane, 2712 - 65th Ave. North, Minneapolis, Minn. 55430

Filed Sep. 30, 1982, Ser. No. 429,094

Int. Cl.³ H02G *1/12*

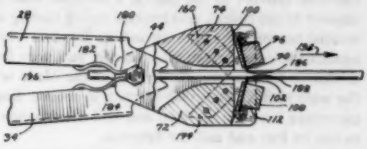
U.S. Cl. 30—90.6 **18 Claims**

1. A tool for use in stripping an end portion of plastic-sheathed electrical cable comprising:

jaw means with first and second jaw elements for engaging, at a location spaced from a free end thereof, an electrical cable having a plastic sheath;

closing means for urging the jaw elements together to engage the cable;

transverse cutting means mounted on the first jaw element for making a transverse cut through the plastic sheath generally perpendicular to a longitudinal axis of the cable when the jaw means engages the cable, said transverse cutting means being movably mounted on the jaw element so that it has a first cutting position for making the transverse cut and so that it moves to a second non-cutting position when the tool is moved relative to the cable for slitting the sheath; and



longitudinal cutting means mounted on the first jaw element adjacent the transverse cutting means toward the free end of the cable for puncturing the plastic sheath at a point near the transverse cut when the jaw means engages the cable and for slitting the sheath as the tool is moved relative to the cable along the longitudinal axis of the cable toward the free end thereof.

4,447,950

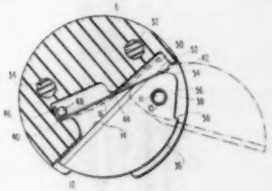
POCKET KNIFE

Ned W. Mizelle, 604 Idol Dr., High Point, N.C. 27262

Filed Apr. 2, 1982, Ser. No. 364,742

Int. Cl.³ B26B *1/02*

U.S. Cl. 30—155 **1 Claim**



1. A combined pocket knife and money clip, comprising,

a casing which has a substantially circular perimeter, said casing including two casing members which are formed of molded plastic and are in direct contact with each other, said casing members each having a substantially circular external face, said casing having an interior cavity which is substantially parallel to said faces,

a grommet extending through the thickness of the casing and provided with a central opening for receiving a keychain, said grommet having a tubular section with radial flanges at its opposite ends,

a blade which is provided with a cutting edge, said blade being pivotally supported on said grommet and being movable from an interior position where the cutting edge is located in said interior cavity to an exterior position where the cutting edge projects outwardly from said casing, said blade also including a cam surface which is located in said cavity,

said casing having a notch in its perimeter which exposes a portion of the blade to permit manual grasping thereof for moving the blade from its interior position to its exterior position,

a spring clip located on the exterior of the casing, said spring clip having a fixed end which is attached to the casing by

the grommet, said fixed end wrapping around the perimeter of the casing to prevent the spring clip from pivoting about said grommet, said spring clip having a movable end which is spaced from the grommet and bears against a said face of the casing so as to be operable as a money clip,

an internal spring located in said cavity for biasing the blade to its interior position and to its exterior position, said internal spring being a resilient wire which is linear when in an unstressed condition, said wire having a fixed end which is affixed to the casing and a free end which is movable relative to the casing, a fulcrum which is fixed relative to the casing, said internal spring having a portion located between the fulcrum and the free end which bears against the cam surface of the blade, said wire being free to flex so that pivotal movement of the blade will cause the wire to flex about said fulcrum in a same direction of curvature between its fixed end and the fulcrum and between its free end and the fulcrum,

said blade having a shoulder which lies in abutting relationship with the end of the internal spring when the blade is in its exterior position.

4,447,951

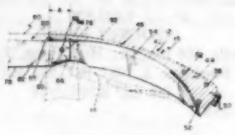
FOLDING KNIFE STRUCTURE

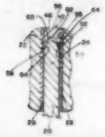
Charles K. Fortenberry, 3112 Vandenberg, Wichita, Kans. 67210

Filed Apr. 5, 1982, Ser. No. 365,240

Int. Cl.³ B26B *1/04*

U.S. Cl. 30—161 **7 Claims**





1. A folding knife structure, comprising:

(a) a handle assembly;

(b) a spring bias assembly connected to said handle assembly having a guide portion;

(c) a blade assembly including a blade member pivotally connected to said handle assembly having a lock portion selectively engagable with said guide portion; and,

(d) said guide portion and said lock portion having opposed points of contact as seen in transverse cross-section when said blade assembly is in an opened position.

4,447,952

DEVICE FOR UNDERWATER CRYOGENIC CUTTING

James H. Elkins, Picayune, Miss., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 27, 1982, Ser. No. 453,068

Int. Cl.³ B26F *1/00*

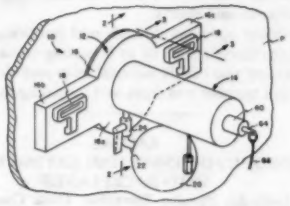
U.S. Cl. 30—361 **11 Claims**

1. A device for performing a cutting or penetrating operation on a workpiece in an underwater environment, said device comprising:

attachment means for securing said device to said workpiece;

enclosure means for excluding water from a zone of said workpiece and for confining a cryogenic fluid in contact with said zone;

velocity power means supported by said attachment means and comprising an explosively driven member adapted to



impact said workpiece in said zone so as to cut or penetrate said workpiece;

a source of fluid at cryogenic temperatures; and

fluid control means for controllably passing said fluid to said zone within said enclosure means so as to cool said workpiece to a cryogenic temperature prior to and during impacting of said workpiece by said member, whereby said cutting or penetrating operation is facilitated.

4,447,953

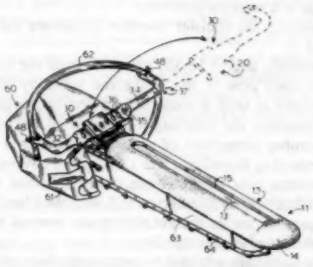
CHAIN SAW GUARD

Anthony V. Lombardino, 113-15 84th Ave., Richmond Hill, N.Y. 11416, and Louis P. Perfetto, 18-11 154th St., Whitestone, N.Y. 11357

Filed Aug. 9, 1982, Ser. No. 406,352

Int. Cl.³ B27B *17/02*

U.S. Cl. 30—382 **17 Claims**



1. A guard for a chain saw of the type having a housing and an elongated saw blade projecting outwardly from said housing including an endless chain having an upper run and a lower run, comprising:

an elongated guard arm having a generally arcuately-shaped cross-section; and

spring-loaded hinge means pivotably connecting said guard arm at one of its ends to said housing for movement between a first end position, in which said guard arm overlies and extends above said upper run of said chain in a spaced-apart generally parallel relationship thereto, and a second end position, in which said guard arm extends upwardly generally normally relative to said chain upper run, said guard arm being resiliently biased by said spring-loaded hinge means so that it normally assumes and is urged into said first end position thereof.

4,447,954

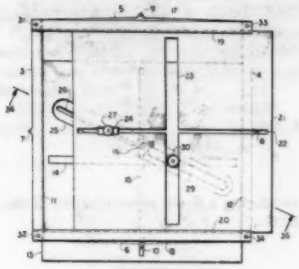
ELLIPSOGRAPH

Marian Poll, 1271 Northwest Hwy., Park Ridge, Ill. 60068

Filed Mar. 14, 1983, Ser. No. 474,974

Int. Cl.³ B43L *11/04*

U.S. Cl. 33—30 D **1 Claim**



1. A drafting instrument for tracing an entire ellipse, or parts thereof, comprising a lower base with first and second side members and first and second end members, each of said members bearing center line indicator on its outer edge and a groove on the inner edge between points adjacent to each end, with another center line indicator on each outer edge of the end members of the lower base at their center, a cross-slotted plate slideably mounted within said grooves, a lower bridge bearing slideably mounted within said cross-slot specifically in the slot parallel to said grooves, an upper base rigidly affixed at both ends to the ends of the lower base side members, said upper base having a first and a second side members, each of the said upper base side members bearing an inner edge groove between points adjacent to each end and set normal to the grooves of the lower base, an upper cross-slotted plate slideably mounted within said grooves, an upper bridge bearing slideably mounted within said cross-slotted plate specifically in the slot parallel to the said grooves, a scribe arm having a lengthwise slot between points adjacent to the first end to a point adjacent to the center, and a lengthwise slot between points adjacent to the center to a point adjacent to the second end, said scribe arm having mounted in the slot at its first end first rotably connecting means between the upper bridge bearing and said slot, second rotably connecting means between the lower bridge bearing and the center of said scribe arm, means for mounting a drafting instrument mounted in said slot at a point near the second end of said scribe arm, said means projecting and sliding freely into the slots of lower and upper cross-slotted plates, specifically, in the slots perpendicular to corresponding mounting grooves, and mounting holes through each corner of the lower and upper base.

4,447,955

METHOD FOR DETERMINING THE LENGTH OF FILAMENTARY MATERIALS, SUCH AS YARN, WOUND UPON A CROSS-WOUND PACKAGE BY MEANS OF A FRICTION DRIVE AND A GROOVED DRUM

Hansruedi Stutz, Dietlikon, and Karl Lapp, Zürich, both of Switzerland, assignors to Loepfe Brothers Limited, Wetzikon, Switzerland

Filed Nov. 29, 1982, Ser. No. 445,442

Claims priority, application Switzerland, Dec. 4, 1981, 7758/81

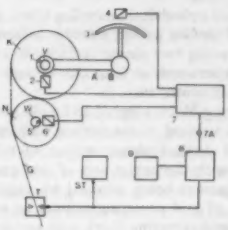
Int. Cl.³ G01B *19/04*

U.S. Cl. 33—129 **11 Claims**

1. A method for determining the length of a yarn wound upon a cross-wound package at a winding apparatus with the aid of a friction drive by means of a grooved drum, comprising the steps of:

continuously measuring during the winding operation in successive time intervals the slip governed by the ratio of the circumferential velocities of the grooved drum and the cross-wound package;

determining therefrom a measured magnitude of the slip; and



undertaking with aid of the measured magnitude of the slip a correction of the yarn length determined during the momentary successive intervals without taking into account the slip.

4,447,956

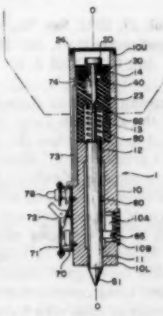
CENTERING DEVICE

Hun H. Chung, No. 98-13, Tung Yang Rd., Fon Yuan City, Taiwan

Filed Aug. 26, 1982, Ser. No. 411,874

Int. Cl.³ G01B *5/25*

U.S. Cl. 33—172 D **1 Claim**



1. A centering device comprising:

(a) a centering pointer having:

a cylindrical, hollow metallic holder having a longitudinal center axis and two ends and being adapted to be coaxially detachably mounted onto the spindle of a manufacturing machine;

a metallic needle member slidably held within said holder and having a pointed lower end extending out of one end of said holder and an upper end disposed within said holder, and a stopper adapted to limit the axial movement of said needle member with respect to said holder, said needle member being in sliding contact with an inner wall of said holder;

a spring means to urge said needle member towards the said lower end of said holder;

a probe member coaxially slidably held within said holder to correspond with the upper end of said needle member, said probe member being electrically conductive and electrically insulated from said holder;

a resilient, metallic contact member adapted to fricitonally restrict the movement of said probe member; an elastic cap for covering the upper end of said holder,

a visual indicator means comprising an indicator lamp, a

dry battery a switch and an electric cord connecting said switch and said resilient contact member so arranged that with said switch turned on said indicator lamp is caused to be lit when the upper end of said needle member comes into contact with said probe member; and

(b) a truncated cylindrical centering block provided with a cylindrical surface having a center axis, and an L-shaped cutaway having two planar surfaces forming a 90 degree angle therebetween, at least one of said surface passing through said center axis;

said centering block adapted to be mounted on an article having a vertical planar surface with one surface abutting said vertical planar surface of said article to be aligned with the center axis of said centering pointer, said alignment being attained by causing said needle member of said centering pointer to move axially by moving said centering block with said article in a direction perpendicular to the center axis of said centering pointer so that said lower end of said needle member contacts and moves along said cylindrical surface with upward movement of said needle member causing said probe member to move to and remain at a position where said needle member comes into contact therewith and moves apart therefrom to activate said visual indicator means which thereby indicates that the center axis of said centering pointer has been aligned with the center axis of said centering block.

4,447,957

ROLL DIAMETER SENSING DEVICE

Roberto Cavazza, Pianoro, Italy, assignor to SASIB S.p.A., Bologna, Italy

Filed Jul. 27, 1982, Ser. No. 402,340
Claims priority, application Italy, Jul. 28, 1981, 12596 A/81
Int. Cl.³ G01B 5/10
U.S. Cl. 33—172 F **6 Claims**

1. A device for sensing the outer diameter of a roll of web upon unwinding of the said web from the said roll for the actuation of a control member when the diameter of the roll has been reduced to a predetermined minimum diameter, comprising a follower arm capable of swinging movement to-and-fro in the direction of the axis of the roll around a fixed axis and urged in the direction of the said roll axis, a control member arranged in the path of the swinging movement of the said follower arm, said follower arm carrying a feeler element intended to bear against the circumferential surface of the web roll, said feeler element being constructed as a gauging fork or snap gauge having a pair of arms which are spaced a predetermined distance apart, in such a manner that the clearance between the said two arms corresponds to the predetermined minimum diameter of the roll and that when said two arms swing over the roll after its diameter has, due to unwinding of the web, reached said minimum diameter, said follower arm acts on said control member.

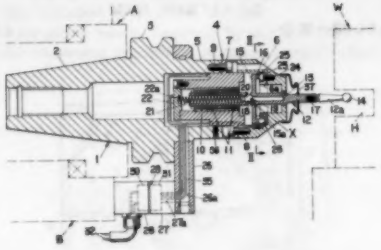
4,447,958

TOUCH SENSOR

Yuzuru Tanaka, Higashiosaka, Japan, assignor to Daishowa Seiki Co., Ltd., Osaka, Japan

Filed Mar. 1, 1982, Ser. No. 353,265
Claims priority, application Japan, Mar. 18, 1981, 56-38899
Int. Cl.³ G01B 7/00
U.S. Cl. 33—174 L **10 Claims**

1. A touch sensor comprising: a holder; a casing intergrally connected to the holder; a plunger and sensor rod disposed coaxially in the casing; a contact at one end of the sensor rod and projecting from the casing; a radial flange integrally connected to the other end of the sensor rod; means mounting the plunger comprising slide ball bearings to enable the plunger to move freely in its axial direction and means biasing the plunger towards the sensor rod; a universal joint between the plunger and the other end of the sensor rod; and means fixed on the casing and in engagement with a peripheral portion of the



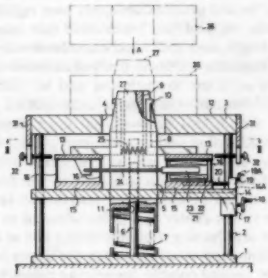
flange for producing a signal representative of the movement of the contact.

4,447,959

INSTRUMENT FOR MEASURING INTERNAL DIMENSIONS

Teruo Watanabe, and Masaaki Ishikawa, both of Kawasaki, Japan, assignors to Mitutoyo Mfg. Co., Ltd., Tokyo, Japan

Filed Jun. 7, 1982, Ser. No. 385,358
Claims priority, application Japan, Jun. 19, 1981, 56-95604
Int. Cl.³ G01B 5/12, 7/12
U.S. Cl. 33—178 E **12 Claims**



1. An instrument for measuring an internal dimension of a workpiece, comprising:

a mount having a planar upper surface adapted to support a workpiece thereon, said mount having an upright opening which extends therethrough and penetrates said planar upper surface;

an elongated, vertically movable, workpiece positioning member extending upwardly through said opening in said mount, said positioning member having a longitudinal axis which is perpendicular to said planar upper surface, said positioning member having an upwardly tapering upper end portion, and means supporting said workpiece positioning member for vertical movement relative to said mount;

a pair of upright measuring elements disposed on opposite sides of said workpiece positioning member and means supporting said measuring elements for horizontal movement toward and away from each other, said measuring elements extending upwardly through said opening and having a pair of measuring probes on the upper ends of said measuring elements respectively, said probes being positioned to extend outwardly in opposite directions from said tapered upper end of said positioning member when said workpiece is in contact with said planar upper surface and an internal dimension measurement of said

workpiece is effected, such that said probes contact with said workpiece, whereby the distance between said probes indicates said internal dimension of said workpiece; and

a displacement detecting device for detecting the distance between said measuring probes.

4,447,960

PLUG GAUGE FOR CHECKING DIMENSIONS OF BORES OF MECHANICAL PARTS

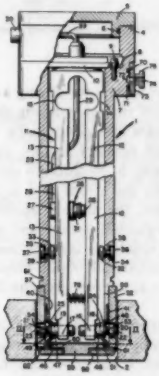
Guido Golinelli, Bologna, and Narciso Selleri, Monteveglio, both of Italy, assignors to Finike Italiana Marposs S.p.A., S. Marino di Bentivoglio, Italy

Filed Apr. 6, 1982, Ser. No. 366,132

Claims priority, application Italy, Apr. 30, 1981, 3417 A/81

Int. Cl.³ G01B 7/12

U.S. Cl. 33—178 E **15 Claims**



1. A plug gauge according to claim 1, wherein said sealing means include at least for checking diameters of bores of mechanical parts, comprising an arm-set, the arm-set including two movable arms, two feelers adapted to touch the surface of a bore to be checked, two connective devices for connecting each feeler to a relevant movable arm, and transducer means associated with the movable arms for providing signals indicative of the diameter of the bore; and a protective device including a hollow nosepiece adapted for entering the bore, the nosepiece having two opposite openings for the passage of the connective devices, a hollow casing located, at least partially, inside the nosepiece and having two holes in correspondence with the nosepiece openings; and a gasket having first portions coupled to the hollow casing, second portions fixed to the connective devices, and third resilient portions connecting the first and the second portions, the gasket being arranged inside the nosepiece and adapted to provide sealing between the holes of the hollow casing and the connective devices, while allowing the displacements of the connective devices and the feelers.

4,447,961

UNIVERSAL BENCH FOR THE ASSEMBLY, TESTING AND REPAIR OF MOTOR VEHICLES

Claude R. Valat, 139 Boulevard Murat, 75016 Paris, France

PCT No. PCT/FR80/00045, 371 Date Nov. 26, 1980, 102(e) Date Nov. 26, 1980, PCT Pub. No. WO80/01998, PCT Pub. Date Oct. 2, 1980

PCT Filed Mar. 26, 1980, Ser. No. 227,093

Claims priority, application France, Mar. 26, 1979, 79 07506; Aug. 24, 1979, 79 21327

Int. Cl.³ G01B 3/38, 5/14

U.S. Cl. 33—180 AT **5 Claims**

1. A universal bench for the assembly, checking and repair of damages vehicle bodies and chassis comprising:

(a) a frame (1) composed of

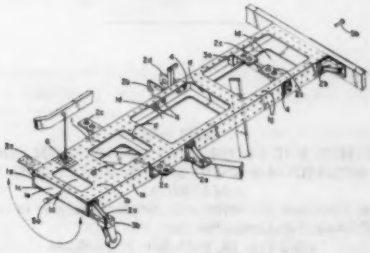
two end transverse bulkheads (1*e*) forming the ends of the frame,

a plurality of transverse reinforcement bulkheads (1*f*) disposed between said two end transverse bulkheads (1*e*),

two steel longitudinal beams (1*a*) joined together by said transverse bulkheads (1*e*),

two steel plates (1*b*, 1*c*), respectively superior and inferior, having open spaces (1*d*) and constituting the two main faces of the frame, said steel plates being welded on said longitudinal beams (1*a*) and transverse bulkheads (1*e*) so as to form an integral box particularly rigid in torsion,

(b) two removable pivoting shafts (5*a*, 5*b*) supported in two holes provided in the center of each of the end bulkheads (1*e*) of the frame, in such a position that the axis of the two shafts (5*a*, 5*b*) corresponds to the longitudinal axis of the frame (1), so as to form a turning arrangement for tipping over the frame,



(c) holes (1*g*) provided in said steel plates (1*b*, 1*c*) and longitudinal beams (1*a*) of the frame, the drilling of said holes in the two longitudinal beams and at least one of the two steel plates being in the form of a square grid pattern;

angle brackets (2) composed of

(1) two perpendicular planar elements (2*f*, 2*g*) reinforced by

(2) two triangular and parallel shoulder plates (2*h*) which are perpendicular to said planar elements, and

(3) a plurality of holes (2*i*) provided in said two perpendicular planar elements (2*f*, 2*g*) according to a square grid pattern similar to the hole pattern provided in said two longitudinal beams (1*a*) and at least one of the two steel plates (1*b*, 1*c*) of the frame (1), and in such a position that when said angle bracket (2) is fixed onto a side of the frame (1), with one of the two planar elements (2*f*, 2*g*) adjacent to said side, the surface of the other planar element will be exactly flush with a surface of the frame (1).

4,447,962

ADJUSTABLE BORE TARGET AND GAGE

Joseph J. Grosberg, Oxford, Conn., assignor to USM Corporation, Farmington, Conn.

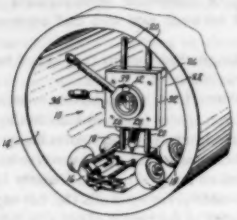
Filed May 24, 1982, Ser. No. 381,357

Int. Cl.³ G01C 15/00

U.S. Cl. 33—286 **7 Claims**

1. A device for aligning a gage with the axis of a bore comprising a carriage having four points of engagement adapted to move along one side of the internal cylindrical surface of the bore in directions parallel to the bore axis, a gage positioning unit mounted on the carriage for movement therewith and including two crossed stages for adjustment in crossed direc-

tions normal to the bore axis, means mounting the gage on one of the stages for rotation on an axis parallel to the bore axis, the



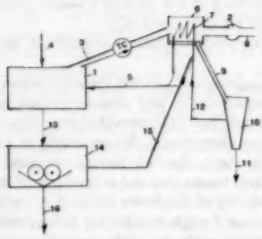
gage being engageable with the bore surface as it is rotated for determining alignment of the gage axis with the bore axis.

4,447,963

METHOD FOR PRODUCING A FUEL FROM SOLID BITUMINOUS AND/OR LIGNOCELLULOSIC MATERIAL

Stig A. Petersson, Skelleftehamn, Sweden, assignor to Boliden Aktiebolag, Stockholm, Sweden

Filed Feb. 19, 1982, Ser. No. 350,244
Claims priority, application Sweden, Mar. 13, 1981, 8101623
Int. Cl.³ F26B *3/00, 7/00*; C10L *5/00*
U.S. Cl. 34—12 **6 Claims**



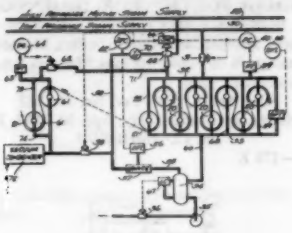
1. A method for producing fuel from solid lignocellulosic material, comprising charging said material to a closed vessel together with a substantially liquid product based on hydrocarbon; maintaining in said vessel a pressure of 12 to 20 kilo Pascal; said hydrocarbon liquid product having a higher boiling point than water and having a temperature of above 60° C., said temperature further being at least 30° C. above the temperature of the water vapour related to the actual pressure, removing the material and liquid hydrocarbon product from the vessel, passing said material between rolls to separate liquid hydrocarbon product from said material, over-blowing said material with air to remove substantial remaining contents of said hydrocarbon product; removing water vapour from said material, thermo compressing said removed water vapour to increase the pressure to 101 kilo Pascal and its temperature to about 320° C., and heat exchanging an ingoing quantity of liquid hydrocarbon product with said compressed and heated vapours to heat said liquid hydrocarbon product to a temperature as given.

4,447,964

DRYER DRAINAGE BY RECIRCULATION WITH PRIMARY AND SECONDARY DRYERS

Thomas A. Gardner, 513 Clark St., Neenah, Wis. 54956

Filed Nov. 23, 1981, Ser. No. 324,190
Int. Cl.³ F26B *13/08*
U.S. Cl. 34—16 **9 Claims**



1. In a steam dryer system for drying a moving web including a primary group of rotatable drying drums in contact with the web; primary steam inlet conduits for supplying steam at a first pressure to said primary drums; primary steam outlet conduits for exhausting blow-through steam, condensate, and noncondensible gases therefrom at a second pressure lower than the first pressure, the noncondensible gases being transported by the blow-through steam; and means for separating said condensate and said blow-through steam, an improvement for directing substantially all of said blow-through steam and noncondensible gases at the first pressure for further drying the web comprising:

a secondary group of rotatable drying drums in contact with the web and having secondary steam inlet conduits and secondary steam outlet conduits for exhausing blow-through steam condensate, and noncondensible gases at a substantial negative pressure, a thermocompressor for recompressing the blow-through steam and noncondensible gases to the first pressure; conduit means for directing the blow-through steam from the separating means to the thermocompressor; velocity pressure control means communicating with the conduit means and the steam jet compressor for maintaining a constant velocity pressure at the primary steam outlet conduits; and flow dividing means for dividing the output from said compressor into a first stream re-entering said primary inlet conduits and a second stream supplying the secondary steam inlet conduits for the secondary group of drying drums so that the primary group of dryers may be operated at low pressure, and so that a selected ratio of blow-through steam to normal rate of condensation in the primary dryers is maintained at a sufficiently low pressure to provide stable control and without wasting steam by bleeding at any operable pressure.

4,447,965

PROCESS AND APPARATUS FOR DRYING WITH LATENT HEAT RECOVERY

Steven C. Bray, Chillicothe, Ill., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 156,337, Jun. 4, 1980, abandoned. This application Nov. 20, 1981, Ser. No. 323,202
Int. Cl.³ F26B *3/04*
U.S. Cl. 34—27 **18 Claims**

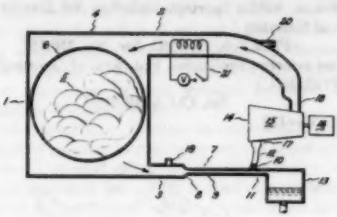
1. A drying process in which liquid is continuously extracted from an article as a vapor by contacting the article in a drying chamber with a drying fluid supplied to an inlet of said chamber at a temperature in excess of the liquid vaporization temperature and is removed from said chamber in an effluent mixture with said drying fluid, and in which the drying fluid in

said effluent mixture is recycled to the drying chamber inlet by:

(a) directing said effluent mixture to a flow accelerating means;

(b) accelerating said effluent mixture in said flow accelerating means to a velocity less than Mach 1 in order to effect the condensation of at least a portion of said vapor;

(c) directing the effluent mixture from said flow accelerating means to a liquid extracting means;



(d) effecting the extraction in said liquid extracting means of condensed vapor from said effluent mixture;

(e) directing the resultant effluent mixture from said liquid extracting means to a compressor means;

(f) effecting a temperature and pressure increase on said resultant effluent mixture in said compressor means; and

(g) returning said resultant effluent mixture from said compressor means to said drying chamber inlet.

4,447,966

ROTARY DRUM

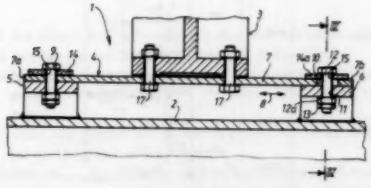
Hans Mollenkopf, Beckum; Jürgen Wurr, and Reinhard Körting, both of Ennigerloh, all of Fed. Rep. of Germany, assignors to Krupp Polysius AG, Beckum, Fed. Rep. of Germany

Filed Jul. 26, 1982, Ser. No. 402,058

Claims priority, application Fed. Rep. of Germany, Aug. 18, 1981, 3132578

Int. Cl.³ F26B *11/02*

U.S. Cl. 34—108 **11 Claims**



1. In a rotary drum having a toothed rim mounted on the drum and supported at a number of points on the periphery of the drum by means of a bridge member having two axially spaced clips fixed to the drum and a cross plate spanning the clips and radially spaced from the drum, the improvement wherein the cross plate is fixed to one clip and connected to the other clip for sliding movement relative thereto axially of said drum.

4,447,967

SHOE WITH ITS VAMP ZONALLY COVERED WITH INJECTED PLASTICS MATERIAL SECURELY BONDED TO THE FABRIC

Luigi Zaino, Mortara (Pavia), Italy, assignor to Nouva Zarine S.p.A. Construzione Macchine E Stampi Per Calzature, Italy

Filed Mar. 24, 1982, Ser. No. 361,494

Claims priority, application Italy, Apr. 23, 1981, 21560/81[U]

Int. Cl.³ A43B *23/00, 1/14*

U.S. Cl. 36—45 **2 Claims**

1. In footwear of the shoe type including a fabric sock to which a reinforcing plastic structure is connected, the improvement comprising:

said fabric sock including a fabric base part and at least one fabric lateral part forming an upper of the shoe, said base part being formed of a fabric which is less dense than the fabric forming the shoe upper; and

said reinforcing plastic structure including a shaped grid-like portion formed by mutually intersecting ribs which penetrate through said less dense fabric of said sock base part into the inside of said sock from its outside, said grid-like portion constituting a support for an insole.

4,447,968

MULTIDIRECTIONAL DYNAMIC FITTING SYSTEM FOR SPORT SHOE

Richard G. Spademan, 130 Country Club Dr. #30, Incline Village, Nev. 89450

Filed Jul. 16, 1981, Ser. No. 283,862

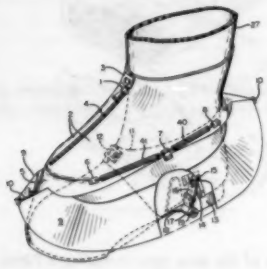
Int. Cl.³ A43B *23/02, 5/04*

U.S. Cl. 36—109 **45 Claims**

1. Apparatus for increasing the tightness of the fit of a shoe worn on the foot of a lower extremity when the foot moves relative to a remainder of the lower extremity away from a normal position of the foot, the apparatus comprising means for engaging a portion of the foot with a given tightness when the foot is in the normal position; and actuating means responsive to relative movement of the foot with respect to the lower

extremity in first and second directions from the normal position and operatively coupled with the engaging means for increasing the tightness of the engaging means on the foot when the foot is in a position other than the normal position.

4,447,969
BOOT FOR WALKING ON SOFT MATERIALS
James R. Johnson, 4361 Ivory Way NE., Salem, Oreg. 97301
Filed Feb. 12, 1982, Ser. No. 348,336
Int. Cl.³ A43B *5/04*
U.S. Cl. 36—116 **4 Claims**

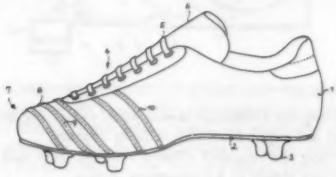


1. A boot for walking on soft materials comprising:
a. means for engaging and disengaging a boot or foot;
b. an axle and/or stirrup;
c. a lower bearing pin, a lower stop pin, a link, and an upper bearing block connecting the axle and/or stirrup to hinged wings;
d. means to prevent fouling.

4,447,970
SKI BOOT
Marc Delery, Caluire, France, assignor to Compagnie Francaise d'Articles de Sport, France
Filed Jan. 20, 1982, Ser. No. 341,077
Claims priority, application France, Jan. 20, 1981, 81 01109
Int. Cl.³ A43B *5/04*
U.S. Cl. 36—121 **5 Claims**

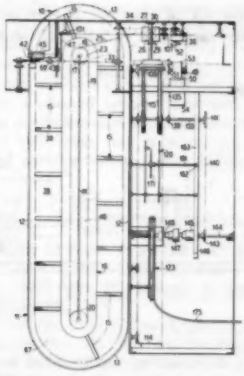
1. An improved ski boot comprising a shell to receive the foot and a rear collar hinging on the shell snugly to fit with the shell,
said rear collar hinged on the shell at the level of the malleoluses of the wearer of the boot, and comprising on its rear side a raised horizontally molding pointing toward the interior of the boot, the shell comprising at its rear a compressible element located in the chamber housing defined with the bottom of the collar, said compressible element cooperating with the collar where said collar moves on the shell,
wherein:
the shell comprises at its rear a raised horizontal molding pointing outward and parallel to the molding pointing inward, for the purpose of limiting the motion of the collar on the shell, said molding pointing outward being located in an horizontal plane comprising the malleoluses of the wearer.

4,447,971
FOOTBALL BOOT
Alfred Bente, Herzogenaurach, Fed. Rep. of Germany, assignor to Messrs. Adidas Sportschuhfabriken Adi Dassler AG, Fed. Rep. of Germany
Filed Feb. 19, 1982, Ser. No. 350,157
Claims priority, application Fed. Rep. of Germany, Feb. 25, 1981, 8105234[U]
Int. Cl.³ A43B *5/02*
U.S. Cl. 36—133 **11 Claims**



1. A football boot comprising friction-enhancing projections on the outside of the upper portion of the boot, to enhance frictional contact with a ball, wherein the projections are formed by strips of leather or the like material, which extend transversely over the instep of the upper portion of the boot and which are joined to the upper portion of the boot in such a way that at least the forward edge regions thereof can lift away from the upper portion of the boot.

4,447,972
LAUNDRY SPREADER, COUNTER, AND FOLDER
Stanley G. McCabe, 1318 Grinell, Lubbock, Tex. 79403
Filed Dec. 15, 1981, Ser. No. 330,941
Int. Cl.³ D06C *3/02*
U.S. Cl. 38—12 **17 Claims**



1. A spreader, counter, folder and stacker for rough laundered articles comprising:
a receiving bin for the laundered articles having a pick up station,
means progressing the laundered articles about said bin at least to said pick up station,

gripper means at said pick up station, gripping an article and elevating the article to an elevated discharge station,

means at said elevated discharge station for releasing the article gripped by said gripper means,

catch means catching a released article,

brush means adjacent said catch means,

said catch means drawing the article past said brush means, to effect spreading of the article,

a spreader bar at the opposite side of said bin from said catch means and adapted to have an article spread therealong and deposited thereon by said catch means,

means brushing the article as moved by said catch means along said spreader bar, to be deposited thereon, said means brushing the article in position to have the article drawn therealong by said spreader bar after deposit thereon by said catch means,

a counter and stacking conveyor in series disposed beneath the path of travel of said spreader bar and adapted to have the article draped thereover during operation of said counter and have the article draped on said brush conveyor to be successively stacked on said brush conveyor, and

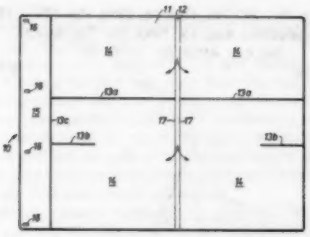
means actuated by said counter effecting a drive to said brush conveyor upon the stacking of a preselected group of articles thereon.

4,447,973

ALBUM LEAF WITH POCKETS FOR INSERTION OF PHOTOGRAPHIC PAPER PRINTS AND SIMILAR ARTICLES

Hans Wihlke, Strömkarlsvägen 57, S-161 38 Bromma, Sweden

Filed Jun. 25, 1979, Ser. No. 51,859
Claims priority, application Sweden, Jun. 30, 1978, 7807440
Int. Cl.³ G09F *1/10*
U.S. Cl. 40—159 **9 Claims**



1. An album leaf for mounting of a photographic paper print or a similar planar rectangular article comprising:

at least two superimposed layers being joined together along peripheral edges thereof, the outer layer being transparent;

at least one pocket means for inserting the print or the similar rectangular article therein;

frame means for defining said at least one pocket means; and

restriction means, extending partially into said at least one pocket means, for limiting selectable mounting therein of the print or the similar rectangular article to one of a standing upright position and a horizontally oriented position;

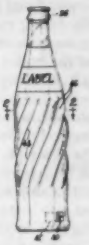
said restriction means extends a distance corresponding substantially to a difference between lengths on a long side and on a short side of the print or the similar rectangular article.

4,447,974

INFLATABLE BOTTLE REPLICA

Robert K. Vicino, 8847 Complex Dr., San Diego, Calif. 92123; Dale L. Cooper; Lauren M. Pembleton, both of 6140 Jackson Dr., San Diego, Calif. 92041, and Constance C. Allen, 728 Robinson Ave., San Diego, Calif. 92103

Filed Aug. 2, 1982, Ser. No. 404,084
Int. Cl.³ G09F *1/08*
U.S. Cl. 40—538 **10 Claims**



1. A giant inflatable generally cylindrical body simulating a product with distinctive trade dress comprising:

(a) a generally cylindrical external envelope dimensioned and shaped to simulate the external appearance of said body when inflated; and to define an internal chamber, in the absence of any rigid supporting element;

(b) a plurality of generally longitudinally extended ribs and furrows defined on the surface of said envelope

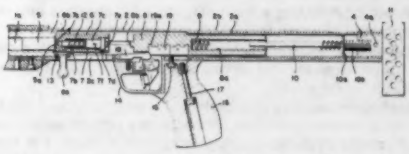
(c) within said chamber a plurality of interconnected shaping means having outer ends attached along said furrows said shaping means having their inner ends joined together along a generally longitudinal axis in the center of said chamber to create an inward radial restrain along said furrows while said ribs billow out under internal inflating fluid pressure applied against the inner face of said envelope.

4,447,975

GUN WITH REDUCED RECOIL

Albert V. Ljutic, 602 N. 52nd Ave., Yakima, Wash. 98902

Filed Mar. 18, 1981, Ser. No. 244,979
Int. Cl.³ F41C *11/00*
U.S. Cl. 42—16 **13 Claims**



1. A gun comprising,

a barrel with a rear cartridge receiving chamber,

a rearwardly extending receiver unit connected to the barrel,

a bolt mounted in the receiver unit for movement between a forward locking position adjoining said chamber and a rearward retracted position, said receiver unit being adapted to receive a flanged cartridge through a loading zone for loading into said chamber when the bolt is in retracted position, said bolt being lockable when in said forward locking position to hold said cartridge in said chamber, said bolt having a defined longitudinal movement when locked in said forward locking position to provide a headspace zone sufficient to accommodate various thicknesses of cartridge flanges,

firing pin means slidably mounted in said bolt for movement

between a firing position in which it projects forwardly beyond the bolt and a retracted position, said firing pin means engaging a rearwardly facing portion of said bolt when in firing position,

hammer means slidably mounted in the receiver unit for longitudinal movement therein between a forward engagement position engaging said firing pin means and a retracted position clear of said loading zone, said hammer means being arranged to engage the rear end of the firing pin means and drive said firing pin means into engagement with said rearwardly facing portion of said bolt when in said forward engagement position and to retract responsive to retraction of the bolt,

spring means yieldingly resisting retraction of the hammer means, and

trigger means for holding the hammer means in retracted position and for selectively releasing the hammer means to engage and drive the firing pin means forwardly into said firing position and to responsively drive the bolt forwardly through said headspace zone unoccupied by the cartridge flange and into engagement with the cartridge flange, the combined forward movement of said hammer means, firing pin means and bolt providing a forward thrust force countering recoil thrust upon firing of a cartridge in said chamber by the firing pin means.

4,447,976

CARTRIDGE MAGAZINE MOUNT

LaDreau V. Cooper, 2102 W. Coolbrook Ave., Phoenix, Ariz. 85023

Filed May 17, 1982, Ser. No. 378,530
Int. Cl.³ F41C *25/02*
U.S. Cl. 42—49 A **5 Claims**

1. Means for mounting a plurality of cartridge magazines such that when one magazine is in use in a weapon it may be readily removed from the weapon when its cartridges are spent while presenting a fresh magazine for insertion into the weapon until all cartridges are spent comprising:

base means independent from and non-integral with a cartridge magazine and having a plurality of mounting surfaces thereon; and

coupling means affixed to each of at least four of said plurality of mounting surfaces for coupling a conventional commercially available cartridge magazine to each of at least said four of said plurality of mounting surfaces of said base means.

4,447,977

MULTI-FACETED FIRING DEVICE

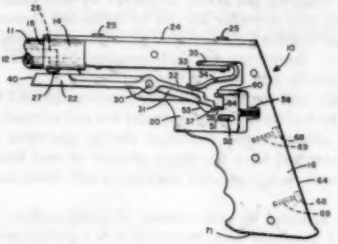
Steven A. Holmgren, 2150 Wilson Ave., Apt. #326, St. Paul, Minn. 55119

Filed Feb. 1, 1982, Ser. No. 344,762
Int. Cl.³ F41C *19/00*
U.S. Cl. 42—51 **7 Claims**

1. A firing device for a muzzle-loading weapon comprising a barrel and a stock, said barrel having a central bore and said stock including a frame, a breech block adapted to receive said barrel, and a trigger, a trigger spring, a hammer, and a hammer spring below said barrel;

said breech block including a right-angle bore communicating with the bore of said barrel, and further having a downward nipple, communicating with said right-angle bore, for impacting by a percussion cap to ignite a charge of powder in said breech;

said hammer having first and second spaced ends and being pivotally mounted in said frame at a site between said ends for pivotal movement between an "armed" position and a "fired" position, said first end being configured for manual engagement to move said hammer into said "armed" position, and including a cavity apposed to said breech for receiving a percussion cap, disposed on said nipple when said hammer moves to said "fired" position;



said hammer spring engaging said second end of said hammer for urging said hammer into said "fired" position;

said trigger being mounted in said frame, in proximity to said second end of said hammer, for sliding movement, aligned with said barrel, and having a first surface for engaging said second end of said hammer to maintain said hammer in said "armed" position;

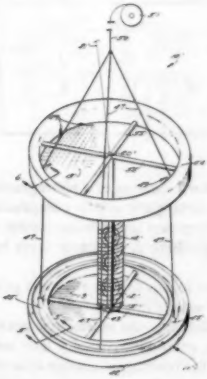
and said trigger spring urging said trigger toward said second end of said hammer.

4,447,978

REACTION GILL NET

Thomas E. Robison, 3661 Airport Blvd. - Apt. 134, Mobile, Ala. 36608

Division of Ser. No. 197,746, Oct. 16, 1980, Pat. No. 4,373,286. This application Aug. 19, 1982, Ser. No. 409,353
Int. Cl.³ A01K *69/10, 74/00*
U.S. Cl. 43—10 **3 Claims**



1. A gill net assembly comprising

a frame having open sides, an open top, and an open bottom;

a bait-enclosing structure mounted to a central portion of said frame;

a first net having openings formed therein large enough to allow small fish to insert their heads through the openings

in an attempt to feed on bait in the bait-enclosing structure and catch their gills on the net if withdrawal from the opening is attempted;

means for mounting said first net to said from adjacent a central portion thereof wherein said first net encloses the sides of said frame and surrounding said bait-enclosing structure;

a second net, said second net having openings large enough to allow small fish which would be caught by said first net to pass completely therethrough, but small enough to allow larger fish to insert their heads through said second net openings and catch their gills on the second net if withdrawal from the openings is attempted;

means for mounting said second net to said frame and substantially concentrically with said first net, and radially outwardly therefrom, and enclosing the sides of said frame; and

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4,447,979

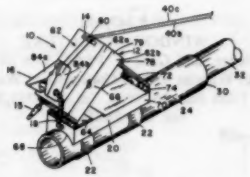
FISH STRIKE ALARM

F. Hoyt Taylor, 420 Pebble Beach, SE., Grand Rapids, Mich. 49506

Continuation-in-part of Ser. No. 409,152, Aug. 18, 1982, abandoned. This application Mar. 10, 1983, Ser. No. 474,181

Int. Cl.³ A01K *97/12*

U.S. Cl. 43—17 **26 Claims**



1. A fish strike alarm for a fishing rod and reel, the rod having a handle end on which the reel is mounted and a free end, the rod and reel together supporting a fish line, said alarm comprising:

a housing operably connectable to the rod opposite the reel from the free end;

clamping means supported on said housing for releasably securing the line extending from the reel;

spring-loaded line switch means supported by said housing and engageable by the line for indicating whether the line portion between said clamping means and the rod free end is at a first tension or at a second higher tension;

selector switch means supported by said housing and including first and second states; and

indicator means responsive to both said line switch means and said selector switch means for providing an indication that the line portion is at said first tension when said selector switch means is in said first state and that the line portion is at said second tension when said selector switch means is in said second state.

4,447,980

SPINNER FOR FISHING LURE, AND FISHING LURE HAVING SPINNER MOUNTED THEREON

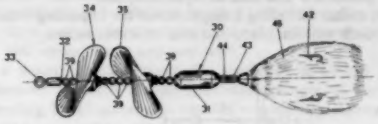
Ronald M. Bassett, 2107 Summerdale, Chicago, Ill. 60625

Filed Apr. 19, 1982, Ser. No. 369,930

Int. Cl.³ A01K *85/00*

U.S. Cl. 43—42.14 **14 Claims**

10. A spinner adapted for being rotatably mounted on the shaft of a fishing lure, said spinner comprising an elongate strip of material having a single concave surface and a single convex surface with the ends of said strip twisted oppositely with respect to each other, and a bearing member centrally mounted on said elongate strip having an elongate aperture of cylindrical surface adapted to be rotatably journalled over said shaft, the axis of said aperture being disposed at an acute angle with respect to and substantially intersecting the longitudinal center line of said elongate strip, whereby one end of said spinner is



adapted to be disposed in a forward direction with respect to said lure and the other end of said spinner is adapted to be disposed in a rearward direction thereto.

4,447,981

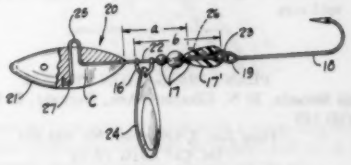
LEVEL-TRAVELLING FISHING LURE

Paul E. Bauer, 20204 Indian Hollow Rd., Wellington, Ohio 44090

Continuation-in-part of Ser. No. 192,649, Oct. 10, 1980, abandoned. This application Jun. 16, 1982, Ser. No. 388,887

Int. Cl.³ A01K *85/00*

U.S. Cl. 43—42.21 **2 Claims**



1. An artifical lure to attract fish, comprising:

(a) an elongate minnow-shaped body formed from a heavier-than-water material, said body having a T-shaped cavity therewithin, and a head and tail,

(b) a line eyelet protruding above said body from about the center of mass thereof for attaching a fishing line,

(c) a bent wire shaft having a generally T-shaped end portion the arms of which are said line eyelet and a detent means which holds the shaft in said cavity, said wire shaft being removably inserted within said cavity, said shaft extending rearwardly from said body's tail portion in generally horizontal alignment with the longitudinal axis of said body and terminating in a hook-attaching means, said line eyelet being integral with said wire shaft,

(d) a spinner blade rotatably disposed on said wire shaft, adjacent said tail,

(e) a fish hook attached to said hook-attaching means, and,

(f) spacer means secured to said wire shaft for spacing said blade from said hook.

4,447,982

BUBBLE-BLOWING APPARATUS

Roger B. Gushea, 142 Annetta St., Syracuse, N.Y. 13207

Filed Jul. 26, 1982, Ser. No. 401,669

Int. Cl.³ A63H *33/28*

U.S. Cl. 46—8 **3 Claims**

1. Bubble-blowing apparatus comprising in combination:

(a) a fan blade rotatable to emit an air stream along a predetermined path;

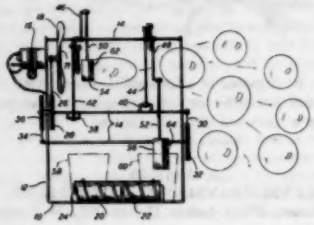
(b) at least one dip ring adapted to carry a quantity of bubble-forming liquid when immersed therein and removed therefrom;

(c) an arm carrying said dip ring at a first point and mounted for movement about a first axis passing through said arm at a second point;

(d) means rotatable in one direction connected to said arm

for imparting reciprocating movement to said arm about said axis to move said dip ring back and forth between a first position in said predetermined path and a second position below said first position; and

(e) means including a single motor for imparting rotation to both said fan blade and said rotatable means;



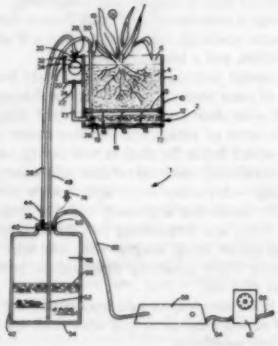
(f) said fan blade being mounted upon, and rotated directly by, the output shaft of said motor, and said rotatable means including at least one belt and pulley connected for transferring rotation of said motor output shaft to additional rotating structure intermediate of said pulley and said arm.

4,447,983

PLANT IRRIGATION SYSTEM

Junji Shinada, 20 N. Ellesmere Ave., Burnaby, B. C., Canada V5B 1J8

Filed Jan. 3, 1983, Ser. No. 455,204
Int. Cl.³ A01G *29/00*
U.S. Cl. 47—48.5 **11 Claims**



1. An apparatus for irrigating plants, the apparatus comprising a planter having a container for a growing medium; a liquid reservoir below the container; openings between the reservoir and the container, permitting a flow of liquid from the reservoir to the container; a filler conduit communicating with the reservoir; a float chamber near the top of the container; a float chamber conduit extending from the reservoir to the float chamber; a float in the float chamber; a normally closed air valve operatively connected to the float so the float opens the valve when liquid from the reservoir rises in the float chamber;

an air conduit connected to the valve so pressurized air from the air conduit is discharged when the valve opens; and

a closed liquid container normally positioned below the planter, the liquid container having a top, a bottom, and means for connecting the air conduit to the container so an end of the air conduit opposite the air valve communicates with the inside of the liquid container near the top thereof and a liquid conduit communicates with the inside of the container near the bottom thereof, the liquid conduit being connectable to the filler conduit of the planter.

4,447,984

PROCESS FOR OBTAINING IMPROVED YIELDS FROM PLANTS

Michael J. Sampson, 21, The Avenue, Chichester, Sussex, and Neville Hutchings, The Station, Edwinstowe, Mansfield, Notts., both of England

PCT No. PCT/GB80/00155, 371 Date Jun. 8, 1981, 102(e) Date Jun. 8, 1981, PCT Pub. No. WO81/00955, PCT Pub. Date Apr. 16, 1981
PCT Filed Oct. 6, 1980, Ser. No. 270,516
Claims priority, application United Kingdom, Oct. 13, 1979, 7935652; May 2, 1980, 8014695; Jul. 11, 1980, 8022810; Jul. 30, 1980, 8024986; Aug. 12, 1980, 8026246
Int. Cl.³ A01G *1/00*
U.S. Cl. 47—58 **6 Claims**

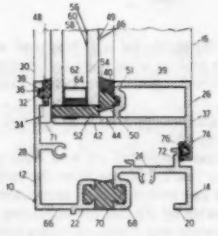
1. A method for reducing or preventing premature release or scattering of seed due to splitting of seed-bearing bodies comprising applying to plants bearing said seed-bearing bodies, not more than fifteen days before harvest, an effective amount of a composition comprising di-1-p-menthene and/or polymeric di-1-p-menthene to provide a semi-permeable coating on said seed-bearing bodies.

4,447,985

WINDOW STRUCTURE

Ronald J. Weber, and Gene T. Pagel, both of Wausau, Wis., assignors to Wausau Metals Corporation, Wausau, Wis.

Filed Jun. 16, 1982, Ser. No. 388,752
Int. Cl.³ E05D *7/00*
U.S. Cl. 49—400 **14 Claims**



1. A window structure (**10**) having an exterior side (**12**) and an interior side (**14**), comprising:

(a) a stationary casing (**22**) defining the perimeter of the window structure (**10**) and of a window opening (**24**);

(b) a movable sash (**26**) fastened to the stationary casing (**22**) in hinged relation, having an open position and a closed position in which it closes the window opening (**24**), the sash (**26**) having sash frame members (**37**) defining the perimeter of the sash (**26**) and of a sash opening (**39**), surfaces of the sash frame members (**37**) defining an exteriorly facing mounting surface (**40**);

(c) an exterior panel (**28**) located exterior to the sash (**26**) and forming part of the stationary casing (**22**), the exterior panel (**28**) extending over the sash (**26**) to overlap its periphery;

(d) a gasket (**30**) fastened to the exterior panel (**28**) and facing interiorly, generally toward the sash (**26**);

(e) a window lite (**46**) mounted in spaced relation to the mounting surface (**40**) to close the sash opening (**39**), the window lite (**46**) having an exterior surface (**48**) adapted to engage the gasket (**30**) in sealing relation when the sash (**26**) is in its closed position and an interior surface (**49**) facing the mounting surface (**40**);

(f) a glazing support member (42) extending exteriorly from the mounting surface (40) to cover the edges of the window lite (46);

(g) a glazing channel (44) defined by the window lite interior surface (49), the mounting surface (40), and the adjacent portion of the glazing support member (42), the glazing channel (44) opening toward the sash opening (39); and

(h) a structural bonding member (54) extending within a selected portion of the glazing channel (44) adjacent to the sash opening (39) and adapted to be inserted into the glazing channel (44) therefrom, structurally engaging the interior surface (49) and the mounting surface (40), to bond the window lite (46) to the sash (26) in supporting relation.

4,447,986

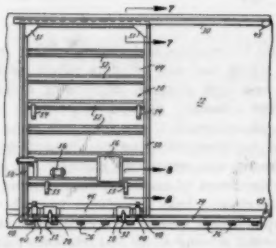
ADJUSTABLE BOXCAR DOOR WITH DOUBLE ROLLER BOGEY TRAVERSE MECHANISM AND METHODS FOR FABRICATING AND INSTALLING SAME

James H. Wilkins, DeSoto, Mo., and Mark Payne, North Little Rock, Ark., assignors to Missouri Pacific Railroad Company, St. Louis, Mo.

Continuation of Ser. No. 117,285, Jan. 31, 1980. This application May 18, 1982, Ser. No. 379,483

Int. Cl.³ E05D *13/02*

U.S. Cl. 49—426 **12 Claims**



1. A rolling type railroad boxcar door assembly for closing a boxcar opening including: a main panel and an adjustable panel, said main panel having a predetermined height slightly less than that of the opening to be covered; the adjustable panel being adapted to be secured to the end of the main panel, the end of the main panel having a flat surface along which the adjustable panel may slide, so that it may be slidably adjustable up and down against the edge of the main panel to combine with the main panel to provide a door that can cover the opening; retaining means to hold the adjustable panel slidably against the main panel during its slidable adjustment prior to its being fixedly secured to the main panel.

4,447,987

ADJUSTABLE THRESHOLD AND SILL ASSEMBLY

Thomas Lesosky, West Bank, Canada, assignor to Decor Doors Manufacturing Ltd., Kelowna, Canada

Filed Mar. 19, 1981, Ser. No. 245,497

Int. Cl.³ E06B *1/70*

U.S. Cl. 49—468 **10 Claims**

6. A threshold and sill assembly, comprising:

(a) a metallic sill having an elongated front, an elongated back, and a top sloping upwardly from the front to the back, the back including:

(i) a vertically disposed back supporting wall;

(ii) a back supporting base extending outwardly from the bottom of said wall;

(iii) an overhang merging along one side with the top of the sill and extending outwardly from the top of said wall over said base;

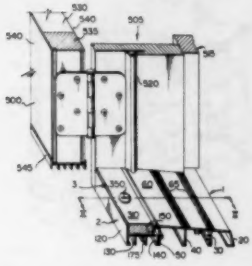
(iv) a lower flange extending upwardly from said base in parallel relationship with said wall so as to form an upwardly facing elongated channel between said lower flange and said wall; and,

(v) an upper flange extending downwardly from said overhang in parallel relationship with said wall so as to form a downwardly facing elongated channel between said upper flange and said wall;

(b) a water resistant, thermally insulating threshold base member generally disposed rearward of said sill and extending longitudinally in parallel relationship therewith, said base member including:

(i) a vertically disposed elongated back supporting wall;

(ii) a horizontally disposed median wall merging with said back supporting wall to divide the back supporting wall into an upper portion above the median wall and a lower portion below the median wall, said median wall



extending forwardly to merge with a supporting flange which extends downwardly to engage said sill in the upwardly facing elongated channel of the sill;

(iii) a vertically disposed inner wall extending upwardly from said median wall and in parallel opposed relationship with the upper portion of said back supporting wall so as to form a longitudinally extending rectangular channel having an open top; and,

(iv) a flange extending forwardly from said inner wall, then upwardly to engage said sill in the downwardly facing elongated channel of the sill; and,

(c) an adjustable threshold member received by the rectangular channel of said threshold base member and adjustably connected therein for upward and downward movement to vary the level of its upper surface above the open top of such channel.

4,447,988

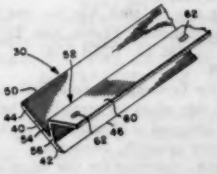
GARAGE DOOR WEATHER SEAL

Richard H. Cole, and Jerry H. Lillie, both of Conneaut, Ohio, assignors to Plycraft Fabricating Corporation, Conneaut, Ohio

Filed Feb. 28, 1983, Ser. No. 470,064

Int. Cl.³ E06B *7/16*

U.S. Cl. 49—485 **14 Claims**



1. A weather seal for a garage door, said seal having a main body portion and a generally L-shape attachment means for attaching said seal to a garage door frame, said L-shape attach-

ment means including first and second legs connected with each other and engageable with surfaces of a frame of a garage door which surfaces are generally normal to each other, said main body portion extending outwardly from said first leg at an included angle of less than 90°, and a first sealing lip on the outer edge of said main body portion adapted to form a weather-tight seal with the garage door when closed.

4,447,989

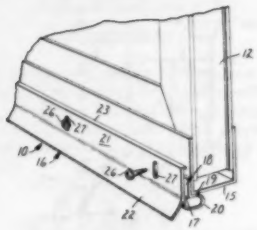
ADJUSTABLE WEATHERSTRIP ASSEMBLY

John J. Mailand, Wyoming Township, Chicago County, and Bruce E. Samuelson, West Lakeland Township, Washington County, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 16, 1982, Ser. No. 358,835

Int. Cl.³ E06B 7/16

U.S. Cl. 49—488 **7 Claims**



1. A weatherstrip assembly or use on an door having side and edge surfaces, said assembly comprising:

an integral extrusion of polymeric material comprising a first stiff portion including first and second strip-like parts disposed at right angles to each other to provide a general L-shaped cross section, a second resiliently flexible strip-like portion extending from the edge of said second part opposite said first part, and a third stiff strip-like portion extending from the edge of said second portion opposite said first portion;

said first portion being adapted to be positioned on said door with said first part along the side surface of the door and said second part along the edge surface of the door, and said third portion being adapted to then be positioned in face-to-face contact with the surface of said first part opposite said door and adjusted to a desired position so that said second part and said flexible second portion form a tube-like structure having a sufficient diameter to fill a void space adjacent the edge surface of said door; and

means for attaching said first and third portions to the door with said third portion in said desired position.

4,447,990

MACHINE FOR FINISHING FERRITE MAGNETIC POT CORES

Alexis Nepomiastchy, Paris, and Guy R. F. Pireyre, Montlucon, both of France, assignors to Societe Anonyme de Telecommunications, Paris, France

Filed Aug. 19, 1981, Ser. No. 294,297

Claims priority, application France, Aug. 22, 1980, 80 18357

Int. Cl.³ B24B 7/00

U.S. Cl. 51—76 R **6 Claims**

1. A machine for finishing magnetic half-pots which have, on the open side, side edges for assembling half-pots together and a center part designed to be machined to create a preset air gap for the pot core assembly, comprising:

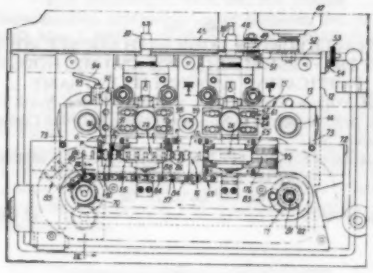
a reference plane supporting the side edges of the half-pots,

at least one grinding wheel projecting through said reference plane in between said side edges,

feed means for feeding said half-pots along said reference plane to said grinding wheel, and

pressure means for pressing the side edges of said half-pots onto the reference plane while said center parts is engaged by each said grinding wheel, said pressure means comprising a flexible elastomeric support wheel opposite each said grinding wheel engaging directly each half-pot to form a yieldable back support for grinding, providing the support force by self-deformation while retaining said side edges of said half-pots in contact with said reference plane and thereby providing precision as to the amounts removed from said center part by grinding,

said feed means comprising feed elements with openings matched to the shape of the half-pots and lamellar in form,



and means for moving said elements freely between said support wheel and said grinding wheel, said means for moving said feed elements comprising a single endless drive chain extending parallel to the direction of travel and in a plane parallel to the reference plane and having extended pins comprising the sole elements on which said feed elements are removably mounted, so as to enable quick replacement of each said feed element, said chain having successive links articulated to each other about axes perpendicular to said reference plane said lamellar feed elements moving along said reference plane, laterally with respect to their respective links and each feed element having a slot and an opening receiving respectively two successive said extended pins.

4,447,991

METHOD FOR GRINDING OR POLISHING CURVED SURFACES OF SOLID BODIES AND APPARATUS FOR CARRYING OUT THIS METHOD

Wolfgang Landgraf; Walter Scharf, both of Zwiesel, and Heinrich Simon, Rabenstein, all of Fed. Rep. of Germany, assignors to Schott-Zwiesel-Glaswerke Aktiengesellschaft, Zwiesel, Fed. Rep. of Germany

Continuation of Ser. No. 204,368, filed as a PCT DE79/00151, Dec. 20, 1979, published as WO80/01261, Jun. 26, 1980 § 102(e), Aug. 18, 1980, abandoned. This application Nov. 24, 1982, Ser. No. 444,186

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1978, 2855895

Int. Cl.³ B24B 5/00

U.S. Cl. 51—161 **15 Claims**

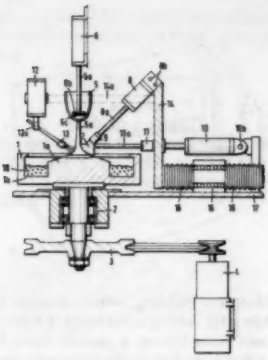
1. Apparatus for removing a step-like ridge from, and for simultaneously grinding, an extended portion of the surface of a substantially rotationally symmetric stem of a glass or ceramic article, which surface is curved both laterally and longitudinally, comprising:

(a) means for rotating the article about the axis of symmetry of said stem, said means including means for securely holding the article as it is rotated;

(b) at least one rigid tool having a rigid, extended work surface curved to complement said lateral and longitudinal curvature of a sector of said extended portion of the surface of said stem for removing the step-like ridge from,

and for simultaneously grinding, said extended portion, the boundary of said work surface defining a sector delimited by: (i) the arc of a first circle intercepted by two radii thereof, (ii) the arc of a second, concentrically situated circle intercepted by said two radii, and (iii) said two radii, the angle subtended by said two radii comprising at least about 100°; and

(c) means operatively connected to said tool for pressing



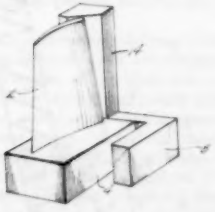
said tool work surface against said extended portion of the surface of said stem, said means for pressing being positioned in a plane extending radially with respect to the axis of rotation of the stem to provide a resultant force in said radial plane sufficient to accomplish the desired ridge removal and grinding when the article is rotated, said means for pressing including elastically displaceable support means for displacing the tool during ridge removal and grinding in response to any asymmetry of said surface.

4,447,992

SHUTTLE FOR A TUMBLING OPERATION

Everett J. Bergquist, Glastonbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Sep. 18, 1981, Ser. No. 303,678
Int. Cl.³ B24B *31/00*
U.S. Cl. 51—163.1 **6 Claims**



1. A support for an article such as a compressor blade or vane for a tumbling operation, said blade or vane having a root portion and an airfoil section with leading and trailing edges, such support having:

a base with a recess to receive the root portion of the blade or vane;

clamping means in said base to engage said root portion and hold it in position with the airfoil section projecting therefrom and;

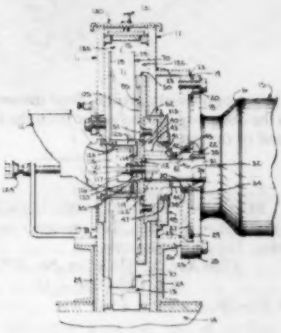
a spar extending from said base and in closely spaced parallel relation to and out of contact with one of said edges, said spar being located only at the end of the airfoil section at said one of said edges and being otherwise completely out of contact with and at a greater spacing from the remainder of the airfoil to form a shield for said edge and to protect said one of said edges from the action of the tumbling material.

4,447,993

ALIGNMENT MEANS FOR CENTRIFUGAL BLASTING WHEEL

Donald A. Laido, N22 W28698 Louis Ave., Pewaukee, Wis. 53072

Filed Apr. 16, 1982, Ser. No. 369,125
Int. Cl.³ B24C *5/06*
U.S. Cl. 51—439 **1 Claim**



1. A centrifugal apparatus, comprising

a motor driven shaft providing an annular ridge spaced from the end of said shaft,

a hub journalled on said shaft and connected to rotate with said shaft,

a particulate throwing wheel operatively connected to said hub for rotation therewith,

a hollow vaned impeller connected to said shaft by a threaded bolt and connected to said hub through a centering plate with said centering plate applying an axial force to said hub through said impeller in response to compression provided by said threaded bolt,

a blast wheel housing surrounding said throwing wheel and said impeller,

a stationary control cage fixedly attached to said blast wheel housing and located between said impeller and said throwing wheel, and

an annular sleeve journalled on said shaft between said hub and said ridge and having a first axial end abutting said annular ridge and a second axial end abutting said hub to maintain said hub and interconnected impeller and throwing wheel in precise axially spaced alignment with respect to said annular ridge, means for fixedly connecting said sleeve to said shaft for simultaneous rotation of said sleeve and said shaft.

4,447,994

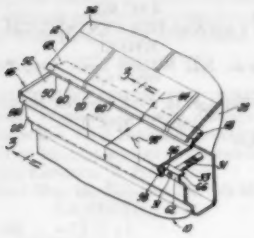
GUTTER CONSTRUCTION AND METHOD

William L. Garneau, 2835 Buick Ave., Pontiac, Mich. 48054

Filed May 26, 1981, Ser. No. 266,662
Int. Cl.³ E04D *13/06*
U.S. Cl. 52—11 **3 Claims**

1. A gutter cover, comprising a relatively thin strip of metal, plastic or other suitable weather resistant material, said strip having substantially parallel opposite ends and opposite side edges, said cover being formed along one edge thereof so as to provide a portion adapted to be insertable between the shingles and the sheathing at the lower peripheral edge of a roof and so that a portion of said cover strip may slopingly extend from the roof and beyond the outer edge of a gutter secured to the roof

so that water draining from the roof is prevented from entering the gutter, said cover being formed to accommodate the fall of the gutter with respect to the horizontally level roof edge that



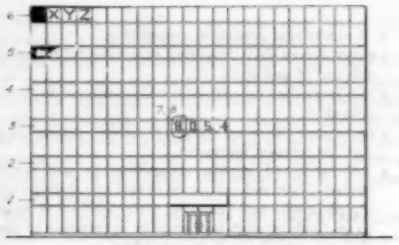
results in a progressively greater slope distance from the roof edge to the outer edge of the gutter from the higher end to the lower end of the gutter.

4,447,995

BUILDING WITH ILLUMINATED SIGN

Junius H. Fulcher, Houston, Tex., assignor to Neal J. Mosely, Houston, Tex., a part interest

Filed Apr. 21, 1982, Ser. No. 370,529
Int. Cl.³ G09F *7/18*
U.S. Cl. 52—38 **8 Claims**



1. An office building provided with interiorly located illuminated signs visible when energized and invisible when deenergized, for construction in an area where exterior signs are not permitted legally,

said office building having a glass paneled exterior with transparent or translucent window panels extending from floor to ceiling of each story and a horizontal row of panels of translucent glass positioned adjacent the floor or the ceiling of a single story building or between the top portion of one story and the bottom portion of the next story in a multi-story building, an illuminated sign positioned within said building comprising a plurality of electrically illuminated sign modules aligned linearly, closely adjacent to and behind selected ones of said translucent glass panels adjacent the floor or the ceiling of a single story building or between the top portion of one story and the bottom portion of the next story in a multi-story building,

each of said modules comprising lighting means selectively energized for illumination in the form of any one of a plurality of selected symbols,

said lighting means, when energized, providing light of an intensity sufficient to be seen outside said translucent glass panels but being substantially invisible from the outside when deenergized, and

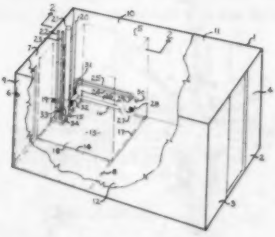
means for selectively energizing said lighting means to produce selected symbols on selected ones of said sign modules.

4,447,996

FACTORY BUILT CONSTRUCTION ASSEMBLY

Edward J. Maurer, Jr., P.O. Box 5880, Austin, Tex. 78763; Hanns U. Baumann, 312 Emerald Bay, Laguna Beach, Calif. 92651, and Herbert E. Watkins, 7803 Pinegreen La., Humble, Tex. 77338

Filed Jun. 8, 1981, Ser. No. 271,802
Int. Cl.³ E04F *17/08*
U.S. Cl. 52—79.1 **9 Claims**



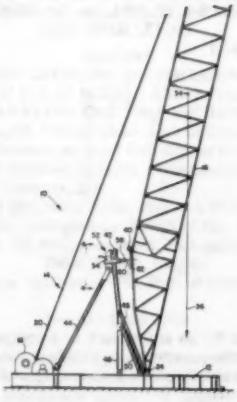
1. A prefabricated building cubicle adapted to receive an interior module, said cubicle comprising: a floor, a ceiling and four walls, said floor having a portion thereof recessed to receive said interior module and to align with the floor of said module, at least one of said walls having plumbing and electrical lines adjacent thereto, said plumbing lines being adapted for connection with said interior module, and another of said walls having an openable area therein, said openable area being of sufficient size to allow passage of said module therethrough.

4,447,997

DRILLING RIG

Raul A. Delgado, Queretaro, Mexico, assignor to Industria del Hierro, S.A., Queretaro, Mexico

Filed Jul. 2, 1982, Ser. No. 394,611
Int. Cl.³ E04H *12/34*
U.S. Cl. 52—120 **7 Claims**



1. A drilling rig comprising:

I a base; and

II an A-frame carried by the base;

A. left and right hydraulic mast cylinders attached to the A-frame;

B. left and right mast pistons in the left and right mast cylinders; and

III a mast pivoted on the base and capable of being raised

from a horizontal position to a vertical position; and when in the vertical position having a center of gravity far above the top of the A-frame; said mast carrying left and right pads adapted to respectively contact the left and right mast pistons before the center of gravity of the mast passes a point directly above the axis of rotation of the mast; and

IV drawworks adapted to raise the mast about its axis of rotation; and

V a hydraulic control system comprising means for synchronizing the movement of the left mast piston with the right mast piston.

4,447,998

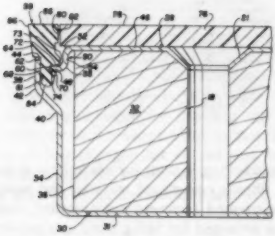
FLOOR PANEL

Kary A. Griffin, 6837 Fisher Rd., Dallas, Tex. 75214

Filed Mar. 5, 1982, Ser. No. 355,127

Int. Cl.³ E04B *2/28*

U.S. Cl. 52—126.6 **9 Claims**



1. A floor panel for use in elevated floor assemblies, said panel comprising:

(a) a core member having a bottom, a top and a side connected between said bottom and said top;

(b) a bottom sheet having a central section lying in a first plane and an upwardly deflected edge portion formed about a periphery of said central section, said upwardly deflected edge portion forming a first shoulder lying in a second plane, a predetermined portion of said central section being in contact with said bottom of said core member, said upwardly deflected edge portion being spaced a predetermined distance from the side of said core member;

(c) a top sheet having a central section lying in a third plane, an edge section lying generally in a fourth plane which is generally parallel to said second plane and is positioned between said second plane and said central section of said bottom sheet, and a connecting section operatively connecting said central section of said top sheet with said edge section, said edge section having an end of predetermined shape and being positioned inboard of and below said first shoulder and forming an opening therebetween, said connecting section and said edge section being spaced a predetermined distance from the side of said core member; and

(d) a flexible edge member having a portion thereof extending through said opening and having an outer shoulder engaging said first shoulder, said flexible edge member having an inner groove being configured to receive said edge section therein to sustain a downward force on said flexible edge member, said inner groove including a portion to mate with said end of predetermined shape to sustain a rotational force on said flexible edge member, said flexible edge member being spaced a predetermined distance from the side of said core member, whereby said flexible edge member is supported entirely by said upwardly deflected edge portion and said edge section.

4,447,999

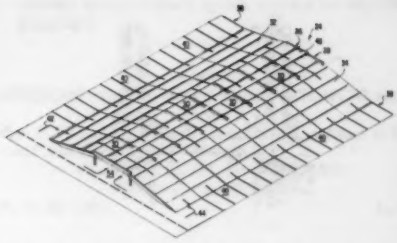
APPARATUS FOR INCREASING THE SELF PARKING CAPACITY OF A PARKING LOT

Wayne B. Stone, Jr., Bethesda, Md., assignor to Wood Mfg. Co., Inc., Flippin, Ak.

Filed Nov. 6, 1981, Ser. No. 318,959

Int. Cl.³ E04H *6/10*

U.S. Cl. 52—175 **2 Claims**



1. In combination with means defining a lower parking level having an automotive drive lane affording access to a row of lower level parking spaces on either side thereof, the improvement comprising: means defining a substantially horizontal, elevated parking level parallel to and overlying said lower level drive lane throughout substantially the entire length thereof and providing two rows of elevated parking spaces thereon; means defining at least one row of parking spaces spaced outboard of and parallel to the adjacent one of said lower level parking rows; said outboard row of parking spaces being at a lower elevation than said elevated parking level; support means defining a pair of automotive drive lanes extending parallel to and along opposite sides of said elevated parking level to provide a path of automotive travel therealong and access to each of said two rows of elevated parking spaces; said last named pair of automotive drive lanes being inclined transverse to the direction of automotive travel therealong and each inclined drive lane being in spaced overlying relation to at least a portion of each said row of lower level parking spaces; one of said inclined drive lanes merging one side of said elevated parking level with said lower parking level; and the other of said inclined drive lanes merging the other side of said elevated parking level with said row of outboard parking spaces whereby selective automotive access may be had to either an elevated parking row or the lower, outboard parking row from said other inclined drive lane.

4,448,000

HIGH TEMPERATURE ULTRA-HIGH VACUUM INFRARED WINDOW SEAL

Thomas J. Manuccia, Silver Springs, Md.; John R. Peele, Alexandria, and Christine E. Geosling, Oakton, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 27, 1982, Ser. No. 372,341

Int. Cl.³ E06B *3/00*; F16D *1/00*

U.S. Cl. 52—208 **11 Claims**

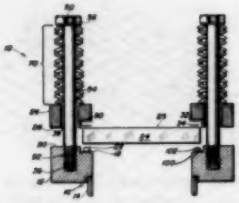
1. A temperature cyclable sealing structure for use under high temperature, high vacuum conditions, comprising:

a sealing flange member coupled with an aperture in a body and sealed thereto, said sealing flange including a continuous annular rim, said annular rim of said sealing flange including a raised continuous annular sealing knob, said sealing knob including a continuous annular indentation in its upper surface;

a panel member including a first face coupled to said annular rim of said sealing flange;

a clamp flange member including a continuous annular rim, said annular rim of said clamp flange being coupled to a second face of said panel member;

sealing means located between said annular rim of said sealing flange and said first face of said panel member for sealing said first face to said annular rim, said sealing means being positioned such that a portion of said sealing means is located between said first face of said panel member and portions of said sealing knob on each side on said indentation;



pressure distribution means located between said annular rim of said clamp flange and said second face of said panel member for distributing forces applied by said annular rim of said clamp flange to said second face; and

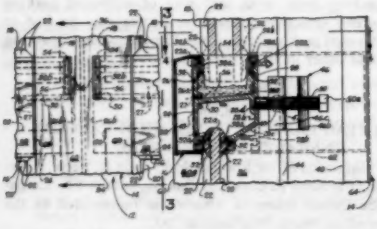
constant force means for pushing said clamp flange toward said sealing flange with approximately constant force over a wide temperature range thereby maintaining a high vacuum seal between said panel member and said sealing flange over a wide range of temperatures.

4,448,001

MOISTURE DAM SYSTEM FOR CURTAIN WALLS

Wayne E. Whitmyer, Buchanan, and Thomas E. Matthews, Niles, both of Mich., assignors to Kawneer Company, Inc., Norcross, Ga.

Filed Aug. 13, 1982, Ser. No. 407,777
Int. Cl.³ E06B 7/14
U.S. Cl. 52—209 **11 Claims**



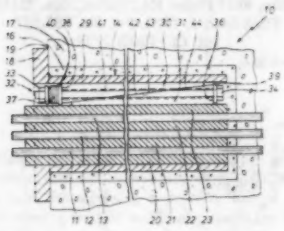
1. A moisture control dam system for curtain wall structures and the like including spaced apart vertical and horizontal frame members forming a framework for supporting at least one wall panel; at least one of said horizontal frame members having a pair of upstanding, spaced apart, inner and outer walls interconnected by a bottom wall forming a channel for receiving a lower edge portion of a wall panel; ribs integrally formed on opposite facing inside surfaces of said inner and outer walls, each rib projecting toward an opposite wall; vertical groove means formed in each of said ribs adjacent at least one end of said horizontal frame member, and a dam having opposite edges inserted in said groove means of said ribs for preventing any accumulated moisture collecting in said channel from running out said one end of said horizontal frame member into another portion of said curtains wall structure.

4,448,002

END-ANCHORING DEVICE FOR ANCHORING AT LEAST ONE BAR MADE FROM A FIBROUS COMPOUND MATERIAL AND BEING USED AS TENDON IN PRE-STRESSED CONCRETE CONSTRUCTION

Gallus Rehm, München-Pasing, and Lutz Franke, Leonberg, both of Fed. Rep. of Germany, assignors to Restra Patentverwertung GmbH, Fed. Rep. of Germany

Filed Aug. 13, 1980, Ser. No. 177,631
Claims priority, application Fed. Rep. of Germany, Sep. 1, 1979, 2932803; Dec. 4, 1979, 2935419; Dec. 19, 1979, 2950303; Dec. 19, 1979, 2951088
Int. Cl.³ E04C 5/12
U.S. Cl. 52—223 L **10 Claims**



1. An end-anchoring system for anchoring at least one bar made from a fibrous compound material and being used as a tendon in pre-stressed concrete construction, comprising an anchorage pot arranged for being fixed at a pre-stressed concrete component and containing a clamping body which extends over a portion of the length of the bar and encloses the latter and upon which transverse forces acting perpendicularly to the longitudinal axis of the bar and producing a frictional connection between the rod and the clamping body and the anchorage pot, respectively, can be exerted, the clamping body being part of translating means for transforming axial forces into transverse forces and serving to transform forces acting upon the device in the longitudinal direction of the bar into proportional transverse forces providing the frictional connection between the rod and the clamping body, wherein, as part of a means for producing the axial forces which are transformed into the transverse forces providing the frictional connection between the rod and the clamping body, at least one clamping element, in the form of a tie rod, is provided that acts upon two members of the axial force producing means that are axially displaceable relative to each other and disposed between a head and a tightening nut of the clamping element, tightening of the tie rod nut being operable for causing an axial displacement of at least one of said two members relative to the other and an axial force in proportion to said displacement, and in that a resilient body in the form of a cup spring arrangement is disposed between the tightening nut and said one of the two members in a manner that the tightening nut bears against the one of the said two members of the axial force producing means via said cup spring arrangement, whereby said cup spring arrangement serves as a threshold member limiting said transverse forces to a preset level.

4,448,003

TUBE CONNECTIONS

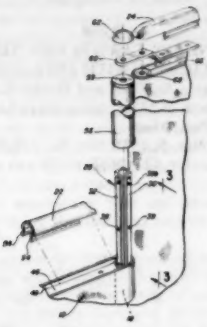
Gene B. Hasbrouck, Corry, Pa., assignor to Hon Industries, Inc., Muscatine, Iowa

Filed Dec. 17, 1981, Ser. No. 331,649
Int. Cl.³ E04B 2/74
U.S. Cl. 52—239 **32 Claims**

1. A tube mounting connector for connection with a tubular member having a sleeve portion at one end, which comprises

a post member having at least a portion thereof of a configuration to be nestably inserted within such a sleeve portion

gripping means attached to said post member and including spaced portions disposed at preselected intervals along the portion of said post member to be inserted within such a sleeve portion, and



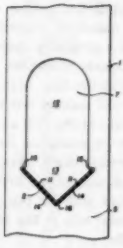
means for adjustably spacing and holding said spaced portions of said gripping means at variable distances away from said post member for effecting telescopic engagement between said connector and such a tubular member by firm sliding engagement of said post and spaced portions of said gripping means with the inside surface of the sleeve portion of such a tubular member.

4,448,004

CHANNEL AND CUT-OUT STRUCTURE FOR REMOVEABLE PARTITION WALL

Stanley E. Thorsell, Edmonton, Canada, assignor to Robert S. Agar Inc., Markham; Thorsell Holdings Ltd., Edmonton and Mudlake Holdings Ltd., Calgary, all of, Canada

Filed Jul. 27, 1981, Ser. No. 286,848
Int. Cl.³ E04H *1/00*
U.S. Cl. 52—241 **2 Claims**



1. In a partition wall having a framework comprising spaced vertical stud members having webs forming aligned cut-outs and one or more horizontal support members, having side legs, extending through said cut-outs, said framework supporting a plurality of panels suspended in side-by-side relationship from the support members,

the improvement comprising:

the support member being generally V-shaped;

each such cut-out having a generally rectangular upper portion and a generally V-shaped lower portion, whereby the web edge defining the cut-out forms a generally V-shaped seat and inwardly projecting shoulders at the confluence of said portions;

the seat being dimensioned and shaped so as to conform with the outer surface of the support member;

the upper portion being of a size sufficient to permit translation therethrough of the support member on edge;

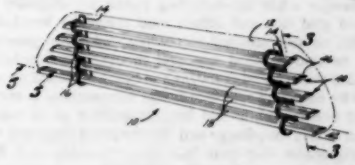
whereby, when the support member is extended on edge through the upper portions of an array of cut-outs, it may be dropped on edge into the corresponding lower portions and rotated to lock one side leg of the support member under one shoulder and further rotated to snap the other side leg under the other shoulder, whereby the support member is then locked against rotation or vertical displacement.

4,448,005

INTERIOR AUTOMOTIVE SUNSHADE WITH RING HINGES

Julian P. Vochelli, Huntington Beach, Calif., assignor to Hollywood Accessories, Compton, Calif.

Filed Sep. 27, 1982, Ser. No. 424,383
Int. Cl.³ E06B *7/08*
U.S. Cl. 52—473 **8 Claims**



1. An improvement in a sunshade for attachment to the interior surface of an automotive window comprising:

a pair of ribs including means for affixing said ribs to the interior surface of said window;

a plurality of louver fixtures connected to each rib and spaced at regular intervals along the longitudinal axis of said corresponding rib, each fixture being ring-shaped and defining a circumscribed space;

a plurality of louvers, each louver disposed through a pair of said louver fixtures connected to a corresponding one of said pair of ribs, said louver disposed through said louver fixture through said circumscribed space; and

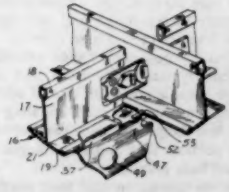
means for temporarily attaching and orienting said louver to said fixture and rib, said means for attaching and orienting included within said louver fixture, whereby a simplified fixture may be devised which allows arbitrary orientation of said plurality of louvers in the same fixture which provides for attachment of said louvers to said rib and therefore indirectly to said window.

4,448,006

GRID CEILING STRUCTURE AND METHOD OF CONVERTING

Robert F. Worley, Bay Village, Ohio, assignor to Donn Incorporated, Westlake, Ohio

Filed May 28, 1981, Ser. No. 267,731
Int. Cl.³ E04B *5/55*
U.S. Cl. 52—488 **5 Claims**



1. A method of converting the appearance of a tee grid lay-in panel ceiling structure to that of a linear beam array structure,

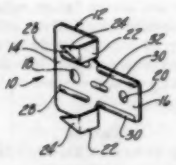
comprising the steps of providing a plurality of elongated converter brackets each having a nominal length substantially equal to a dimension of the rectangular grid of the tees, providing each bracket with first gripping means adapted to engage the face flange of a parallel aligned tee and second gripping means spaced in a predetermined pattern along its length and adapted to engage a plurality of beams extending crosswise to said bracket, assembling the converter brackets on selected parallel tees in an existing suspended grid by engaging said first gripping means with the face flanges of such selected tees, and assembling a plurality of beams on said converter brackets by interengaging said beams with said second gripping means, said first gripping means preparatory to installation lying in a substantially horizontal plane, and including a first plurality of elements on one longitudinal side of the bracket and second plurality of elements on the other side of the bracket, said first plurality of elements being adapted to engage a face flange exclusively from one side of the web of a tee and said second plurality of elements being adapted to engage a face flange exclusively from the opposite side of the web of the tee, said first gripping means being arranged to interengage with said face flanges while lay-in ceiling panels are disposed on said selected grid tees and others, said converter brackets being installed on said selected tees while said lay-in panels are in place on said selected tees and others, said brackets being provided with camming means and being mounted on said face flange by engaging said face flange substantially at the middle of said bracket while said bracket extends at an angle with respect to said face flange and thereafter rotating said brackets into alignment with said face flange causing said first and second plurality of elements to move into engagement with said face flange, and camming said brackets axially with respect to said grid tees in response to said rotation thereof to properly position brackets with respect to each other along said face flange.

4,448,007

WALL PANEL FASTENER

George C. Adams, 3055 Hunting Valley Dr., Ann Arbor, Mich. 48104

Filed Apr. 22, 1981, Ser. No. 256,678
Int. Cl.³ E04B 5/52
U.S. Cl. 52—489 **7 Claims**



1. A wallboard fastener comprising a single piece of sheet material having:

a base portion, said base having a first aperture therethrough;

a tongue portion extending outwardly from and coplanar with said base portion, said tongue portion having a second aperture therethrough and said tongue having two sides which intersect said base portion;

a pair of first flanges, each flange extending substantially perpendicularly outwardly from said base portion, one first flange disposed on each side of said tongue;

a pair of impaling flanges, each impaling flange extending from one first flange in a plane parallel to but spaced from said base portion, said impaling flanges overlying a portion of said base portion,

at least one rib formed in said base portion, said base rib protruding outwardly from said base portion in the same direction as said first flanges, and

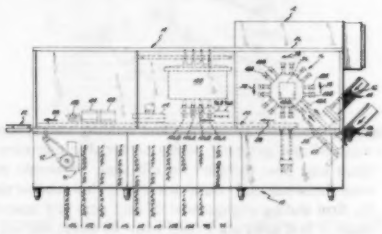
at least two ribs formed in said tongue portion, said tongue ribs protruding outwardly from said tongue in the same direction as said first flanges, one tongue rib being formed adjacent each side of said tongue so that said tongue aperture is positioned in between said tongue ribs, said tongue ribs terminating short of an edge of said tongue portion most spaced from said base portion.

4,448,008

MULTIPLE MANDREL CARTON ERECTING, FILLING AND SEALING MACHINE WITH TWO-STAGE LOADING

Lawrence A. Pankratz, St. Paul, and Donald G. Corniea, Inver Grove Heights, both of Minn., assignors to Liquipak International, Inc., St. Paul, Minn.

Filed Nov. 9, 1981, Ser. No. 319,801
Int. Cl.³ B65B 43/26
U.S. Cl. 53—202 **13 Claims**



1. A machine for erecting flat, collapsed cartons and for filling and sealing the erected cartons during a sequence of operating cycles, the machine comprising:

a frame;

first and second spindles mounted on the frame for simultaneous rotation about a common horizontal axis;

first and second pairs of mandrels mounted side-by-side on the first and second spindles, respectively, at each of a plurality of equally spaced circumferential positions, each first pair of mandrels extending outward from the first spindle in a generally radial direction with respect to the horizontal axis to define a first vertical plane and each second pair of mandrels extending outward from the second spindle in a generally radial direction with respect to the horizontal axis to define a second vertical plane which is parallel to the first vertical plane;

a plurality of first and second work stations mounted side-by-side on the frame in the first and second vertical planes, respectively; the plurality of first work stations being positioned circumferentially about the horizontal axis in the first plane to surround the first spindle, and the plurality of second work stations positioned circumferentially about the horizontal axis in the second plane to surround the second spindle;

intermittent spindle drive means for rotating simultaneously the first and second spindles and the mandrels mounted thereon in the first and second vertical planes, respectively, about the horizontal axis during each operating cycle to bring each first pair of mandrels sequentially into alignment with each of the first work stations and each second pair of mandrels sequentially into alignment with each of the second work stations;

first and second supply means aligned with the first and second vertical planes, respectively for holding supplies of flat carton blanks;

first and second erecting means aligned with the first and second vertical planes, respectively for erecting pairs of flat carton blanks into open-end tubular form during each operating cycle;

first and second loader means positioned at first and second loader work stations, respectively, for loading a pair of

open-end tubular carton blanks onto the first pair of mandrels aligned with the first loader work station during each operating cycle and loading a pair of open-end tubular carton blanks onto the second pair of mandrels aligned with the second loader work station during each operating cycle;

means positioned at the work stations in the first and second vertical planes subsequent to the first and second loader work stations for successively forming and sealing bottom ends of the pair of carton blanks carried by each first and second pairs of mandrels;

first and second parallel horizontal conveyor tracks aligned with the first and second vertical planes, respectively;

first and second carton transfer means positioned at first and second transfer work stations for successively transferring a pair of carton blanks with their bottom ends sealed from each of the first and second pairs of mandrels to the first and second conveyor tracks, respectively;

a plurality of side-by-side first and second work stations positioned along the first and second conveyor tracks, respectively;

means positioned at the first and second work stations along the first and second conveyor tracks for filling, closing and sealing top ends of each pair of carton blanks; and

first and second carton conveyor means operatively synchronized with the intermittent spindle drive means for simultaneously advancing carton blanks by pairs along the first conveyor track and along the second conveyor track in stepped sequence from one work station to another during each operating cycle.

4,448,009

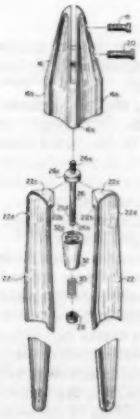
FINGER ASSEMBLY FOR A CASE LOADER

John L. Raudat, North Madison, Conn., assignor to Standard-Knapp, Inc., Portland, Conn.

Continuation-in-part of Ser. No. 182,103, Aug. 20, 1980, abandoned, which is a continuation-in-part of Ser. No. 135,508, Mar. 31, 1980, abandoned. This application Jun. 12, 1981, Ser. No. 273,012

Int. Cl.³ B65B *21/16*

U.S. Cl. 53—248 **15 Claims**



1. A finger assembly for a case loader comprising a finger holder mounted to the loader, a finger retaining member cooperating with said holder to define a plurality of finger sockets therebetween, an axially elongated fastener extending in a generally vertical direction centrally through an opening in said retaining member and secured to said holder, a plurality of fingers having upper ends inturned toward the axis of said fastener for pendulously supporting said fingers in said sockets for movement inwardly toward and outwardly away from the axis of said fastener, each finger having a portion of said inturned end with a downwardly facing concave contour slidably engaging a convex rib portion of said retaining member to pendulously support each finger for movement inwardly toward and outwardly away from said central fastener, and biasing means comprising a spring member acting between said retaining member and said holder to resiliently biase said upper ends of said fingers into said sockets to thereby urge said fingers outwardly relative to said axis of said fastener to cooperate with the fingers of other such finger assemblies to form pockets through which articles drop to load a case.

4,448,010

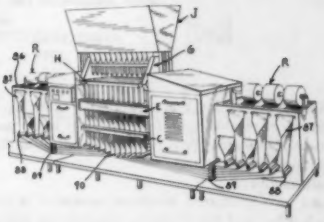
METHOD AND APPARATUS FOR MAKING BAG-TYPE PACKAGES

Roger H. Stohlquist; Jonathan G. Brown, both of Rockford, and Kenneth V. Baker, Stillman Valley, all of Ill., assignors to Anderson Bros. Mfg. Co., Rockford, Ill.

Filed Dec. 14, 1981, Ser. No. 330,217

Int. Cl.³ B65B *43/04, 43/16*

U.S. Cl. 53—450 **31 Claims**



1. A packaging machine for making bag type packages from strip web material comprising, product dispensing means for dispensing product at a bag filling station, an elongated mandrel having a forward end portion, means for moving the mandrel lengthwise along a feed path in forward and return strokes, means for forming an end portion of strip web material around the mandrel into a sleeve having a lead end, feed means for advancing the sleeve with its lead end forward along said feed path during at least a portion of the forward stroke of the mandrel to a forward position, means for opening the lead end of the sleeve, a plurality of bag gripper assemblies and transfer means for moving the bag gripper assemblies from a bag loading station in overlying relation to the leading end of the sleeve at its forward position to the bag filling station, each bag gripper assembly including first and second outer jaws laterally spaced apart and first and second inner jaws disposed between the outer jaws and movable relative thereto, means for operating the bag gripper assembly at the bag loading station to move the inner jaws inwardly relative to the outer jaws to a release position for reception in the open end of the sleeve when it is advanced to its forward position and for moving the inner jaws outwardly to a clamp position after the sleeve is advanced to its forward position to grip opposite side walls of the open lead end of the sleeve and to support the lead end of the sleeve in an open condition, means for severing the sleeve at a location spaced inwardly of its lead end to form a bag supported by the bag gripper assembly transverse seal means for transversely sealing the sleeve at a location spaced from the end supported by the gripper assembly means for maintaining the jaws of the bag gripper assemblies in a clamp position to support the bags as the transfer means moves the gripper assemblies from the bag loading station to the bag filling station, the transfer means including means for positioning the bag gripper assembly at bag filling station in an attitude supporting the bag carried thereby with its open end facing upwardly to receive product dispensed by the product dispensing means at the filling sta-

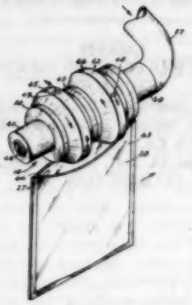
tion, and means for operating the product dispensing means to dispense product into bags at the bag filling station.

4,448,011

INERT GAS WHEEL ASSEMBLY

Peter H. Pohl, Worthington, Ohio, assignor to Abbott Laboratories, North Chicago, Ill.

Filed Oct. 1, 1981, Ser. No. 307,475
Int. Cl.³ B65B *31/04, 55/24*
U.S. Cl. 53—512 **9 Claims**



1. An apparatus for cleaning filling material from filled pouches to be sealed and for injecting inert gas into said pouches, said container pouches having opposing flexible walls with an opening at the top:

a shaft member;

at least two apertured members mounted in proximity to each other and for opposing rotation on said shaft member;

said shaft member and said apertured members including interconnecting fluid-passage means;

means to supply a pressurized inert gas to said fluid passage means in said shaft member;

said apertured members including channels constructed and arranged to provide rotation of one of the apertured members in one direction and the other apertured member in an opposing direction in reaction to the force of the inert gas directed through said fluid passage means; and

means to place said pouches at a position below said apertured members with the opening and said flexible opposing walls adjacent thereto;

whereby when said inert gas is forced through said apertures, said rotatable members will move in opposing directions to remove said material from the outside of and adjacent the opening of said pouch as well as to introduce an inert atmosphere therein.

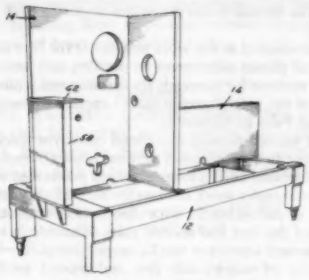
4,448,012

FORMING, FILLING AND SEALING MACHINE

Ivan L. Kauffman, Union Lake, and Robert J. Allen, Farmington, both of Mich., assignors to Ex-Cell-O Corporation, Troy, Mich.

Filed Nov. 12, 1981, Ser. No. 320,985
Int. Cl.³ B65B *43/26*
U.S. Cl. 53—563 **4 Claims**

1. A forming, filling and sealing machine comprising a base frame, a single vertical keel, said single vertical keel being secured along the longitudinal centerline of said base frame and having forming means mounted on one side thereof for forming side seam sealed blanks into rectangular tubes, bottom sealing means mounted on said one side thereof for sealing the bottoms of said tubes into open topped cartons, filler means mounted on said one side thereof for filling said open topped cartons with a liquid, top sealing means mounted on said one side thereof for sealing the tops of said filled cartons, and conveyor means mounted on said one side thereof for conveying said cartons; said vertical keel also having driving and



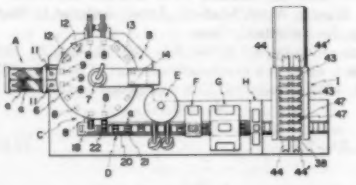
indexing means mounted on the other side thereof and operatively connected to said forming, filler, sealing and conveying means for actuating means.

4,448,013

AUTOMATIC CARTON PACKING MACHINE

Mutsuhiko Nakajima, Soka, Japan, assignor to Ace Pak Company Incorporated, Japan

Filed Apr. 2, 1981, Ser. No. 250,282
Int. Cl.³ B65B *43/26*
U.S. Cl. 53—565 **6 Claims**



1. An automatic carton packing machine comprising:

a magazine for accommodating a plurality of carton blanks in a flattened state;

means for extracting the carton blanks one by one;

means for opening the carton blanks into a rectangular form during extraction of the carton blanks;

a disc adapted to be rotated intermittently and having mandrels secured thereto, said mandrels being adapted to receive the open carton blanks;

means for effecting a bottom sealing of the open carton blanks while said disc rotates;

means for withdrawing the carton blanks from said mandrels and arraying the withdrawn carton blanks in rows;

means for pushing out the carton blanks intermittently by a distance corresponding to one carton blank from the rows to shift the carton blanks into successive ones of bucket portions of a bucket conveyor adapted to move in synchronization with intermittent rotary motion of said disc;

means for effecting, during the intermittent running of said bucket conveyor, filling of the carton blank with a substance;

means for folding the carton tops including means for forming triangular lugs extending outwardly of the carton tops; and

means for bending the triangular lugs downwardly and sealing the bent triangular lugs against sides of the carton blanks to form completed and filled cartons having flat tops;

said means for bending the triangular lugs downwardly and sealing the bent lugs comprising:

a clamp conveyor arranged to move at right angles to a direction of movement of said bucket conveyor and adapted to run intermittently in a timed relationship with the running of said bucket conveyor;

a plurality of horizontally extending base plates connected along said clamp conveyor, each base plate including a substantially vertically extending back plate movable into said bucket portion to move a carton in said bucket portion out of said bucket portion;

at least two clamping members movably mounted to and extending from the bottom of each of said base plates for movement together to clamp a carton therebetween;

push-up means including a push-up plate onto which said back plates intermittently move at least one carton, said push-up means moving said push-up plate upwardly to move a carton thereon into engagement between said clamping members to fold the triangular lugs of the cartons downwardly;

clamp set means engageable with said clamping members for moving said clamping members together to clamp a carton therebetween after the triangular lugs have been folded down; and

a hot air blower positioned to blow hot air toward an underside of the triangular lugs and side surfaces of the carton for sealing the triangular lugs against the side surfaces of the carton when the push-up plate pushes the carton into engagement between said clamping members.

4,448,014

APPARATUS FOR CUTTING CROP

Wilfred E. Klinner, Milton Keynes, England, assignor to National Research Development Corporation, London, England

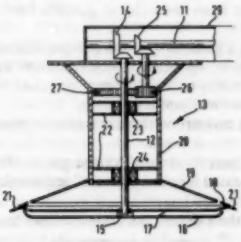
PCT No. PCT/GB81/00159, 371 Date Apr. 9, 1982, 102(e) Date Apr. 9, 1982, PCT Pub. No. WO82/00563, PCT Pub. Date Mar. 4, 1982

PCT Filed Aug. 6, 1981, Ser. No. 369,012

Claims priority, application United Kingdom, Aug. 14, 1980, 8026481

Int. Cl.³ A01D *55/18, 57/28*

U.S. Cl. 56—13.6 **16 Claims**



1. Crop cutting apparatus for cutting crop by rotary motion about a substantially vertical axis comprising:

a first rotor,

a second rotor, said first and second rotors being mounted for rotation about a common substantially vertical axis,

said first rotor including at least one cutting means for cutting crop by rotation of the first rotor, and said second rotor including surface means extending from a peripheral edge separated by a gap from an adjacent edge of said first rotor and providing a crop conveying surface for conveying cut crop to the rear of the apparatus by rotation of said second rotor, said conveying surface forming an angle less than forth-five degrees to the horizontal, said first rotor also including mounting means for mounting said cutting means at an attachment region outside the edge of said surface means of said second rotor, and

drive means for driving said first and second rotors in rotation at different angular velocities such as to effect cutting of crop by said cutting means and conveying of crop by said conveying surface,

said drive means driving said rotors in rotation at said different angular speeds with a working clearance between said rotors to prevent contact between said first and second rotors at the periphery of said conveying surface of said second rotor, said gap between said first and second rotors at said periphery of said conveying surface of said second rotor extending between said edges in a direction forming an angle less than forty-five degrees to the horizontal.

4,448,015

WINDING METHOD AND APPARATUS

Fumio Usui, 441 Shimoasao, Asao-ku, Kawasaki-shi, Kanagawa, 215, Japan

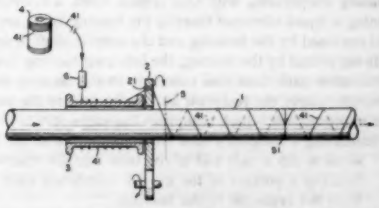
PCT No. PCT/JP81/00419, 371 Date Aug. 5, 1982, 102(e) Date Aug. 5, 1982, PCT Pub. No. WO82/02377, PCT Pub. Date Jul. 22, 1982

PCT Filed Dec. 28, 1981, Ser. No. 405,953

Claims priority, application Japan, Jan. 13, 1981, 56-3511

Int. Cl.³ D07B *7/14*

U.S. Cl. 57—3 **9 Claims**



1. A winding method comprising the steps of:

inserting a core bar through a winding drum and a winding disk for a coaxial and relative movement therewith;

disposing a reel with a linear material wound therearound at a predetermined position;

fixing a leading end of the linear material payed out from said reel at an arbitrary position on said core bar through a guide hole of said winding disk;

rotating said winding disk in a first direction while moving said core bar in a predetermined direction, thereby winding the linear material around said core bar while winding the linear material around said winding drum;

binding, after a predetermined quantity of the linear material has been wound, a terminal end of the winding of the linear material on said core bar to fix it thereon;

rotating, after said binding and fixing, said winding disk in a second direction which is opposite to said first direction while moving said core bar in a predetermined direction, thereby winding the linear material around the core bar while unwinding and rewinding the linear material around the outer peripheral surface of said winding drum;

binding, after a predetermined quantity of the linear material has been wound, the terminal end of the winding of the linear material securely around said core bar; and

repeating the winding and secure binding of the linear material around said core bar a predetermined times.

4,448,016

METHOD OF LUBRICATING A SPINNING OR TWISTING SPINDLE AND A SPINDLE LUBRICATED ACCORDING TO THE METHOD

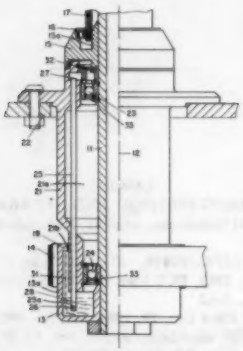
Dieter Thalmann, Winterthur, Switzerland, assignor to Rieter Machine Works Ltd., Winterthur, Switzerland

Filed Oct. 18, 1982, Ser. No. 434,915

Claims priority, application Switzerland, Oct. 27, 1981, 6850/81

Int. Cl.³ D01H *7/20*

U.S. Cl. 57—133 **10 Claims**



1. In a method of lubricating a bearing of a spinning or twisting spindle containing a spindle shaft, a fixedly mounted housing cooperating with said spindle shaft, a reservoir containing a liquid lubricant therein, the bearing being secured to and enclosed by the housing and the spindle shaft being rotatably supported by the bearing, the lubricant moving in a closed circulation path from the reservoir to the bearing which is arranged above the reservoir and back again to the reservoir, the improvement which comprises the steps of:

immersing a stationary tube which is secured to the housing so as to dip at one end of the tube into the reservoir and forming a portion of the closed circulation path leading from the reservoir to the bearing;

placing the spindle shaft and reservoir into rotation;

causing the lubricant within the reservoir, at the start of rotation of the spindle shaft and reservoir and before reaching a maximum speed of rotation, to flow against an inlet opening provided at the immersed end of the tube in order to form a back pressure at the inlet opening; and

selecting the position of the tube such that upon reaching the maximum speed of rotation of the lubricant the inlet opening is located outside the region of the lubricant present in the reservoir and which lubricant is subjected to centrifugal force.

4,448,017

JEWELRY CHAIN LOOP ELEMENT AND METHOD OF ASSEMBLY

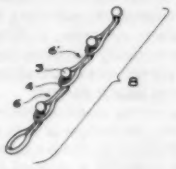
Jean R. Stark, 309 Second St., Belvidere, N.J. 07823

Filed Apr. 26, 1982, Ser. No. 371,724

Int. Cl.³ F16G *13/00*

U.S. Cl. 59—80 **11 Claims**

1. An improved jewelry chain link comprising a continuous wire loop having a generally teardrop shape and including a crimped segment of generally straight parallel wires in substantial contact along their length and at least one loop segment, said crimped segment as seen in elevation being bent from a 15 to a 60 degree angle with respect to the loop segment of the link, and having a tip element disposed on one end of said crimped segment, said tip element being smaller than the inner diameter of said loop segment and providing an undercut into



which the loop segment of a second link is articulatably receivable upon squeezing said loop segment thereabout.

4,448,018

METHOD FOR ADDING WATER TO A HEAT EXCHANGING SYSTEM

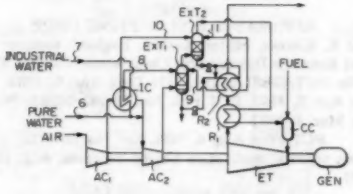
Norio Sayama, and Hiromi Nakamura, both of Chiba, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Nov. 23, 1981, Ser. No. 324,096

Claims priority, application Japan, Nov. 25, 1980, 55-165719

Int. Cl.³ F02C *3/30, 7/143*

U.S. Cl. 60—39.05 **8 Claims**



1. A method for operating a regenerative gas turbine cycle to recover heat from the exhaust gas of a turbine comprising the steps of:

compressing a gaseous medium to a predetermined pressure;

saturating the compressed gaseous medium with steam from untreated water containing impurities to form a mixture of said gaseous medium and steam;

washing said mixture with pure water to remove said impurities;

transferring heat from said exhaust gas to said mixture;

mixing the heated mixture with fuel and combusting to drive said turbine; and

discharging the exhaust gas after the heat transfer.

4,448,019

TURBINE BYPASS TURBOJET WITH MID-TURBINE REINGESTION AND METHOD OF OPERATING THE SAME

Garry W. Klees, Mercer Island, Wash., assignor to The Boeing Company, Seattle, Wash.

Continuation-in-part of Ser. No. 890,364, Mar. 27, 1978, Pat. No. 4,294,068. This application Sep. 29, 1981, Ser. No. 306,652

Int. Cl.³ F02F *3/02*

U.S. Cl. 60—204 **22 Claims**

13. In a supersonic jet engine adapted to cruise at supersonic speeds at a relatively high efficiency, to operate with high turbine inlet temperatures for high power operation, and to cruise subsonically with a relatively low specific fuel consumption, said engine comprising:

a. a housing structure having an upstream inlet end to receive intake air, and a downstream exhaust end to discharge jet exhaust,

b. an air inlet arranged to receive intake air at subsonic velocity and also to receive intake air at surpersonic velocities and reduce said air to subsonic velocity,

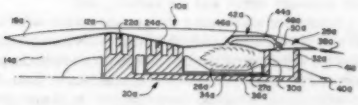
c. a compressor mounted in said housing rearwardly of said inlet and arranged to compress air flowing into said inlet, said compressor having a first compressor section and a second compressor section, each having an inlet end and an outlet end arranged to operate between a maximum compression ratio and a minimum compression ratio,

d. means defining a combustion chamber mounted in said housing downstream of said compressor to receive compressed air therefrom,

e. fuel injection and ignition means in said combustion chamber arranged to burn fuel in airflow from the compressor and provide a gaseous flow from said combustion chamber,

f. a turbine mounted in said housing rearwardly of said combustion chamber and arranged to receive said gaseous flow from the combustion chamber, said turbine having a first stage operatively connected to the compressor second section, and a second stage operatively connected to the compressor first section adapted to receive gaseous flow from said first stage, each of said first and second turbine stage having a predetermined cross-sectional nozzle area through which said gaseous flow passes to pass rearwardly through a primary exhaust passageway,

g. an exhaust nozzle to receive gaseous flow from said turbine and exhaust said flow to produce a thrust,



h. turbine bypass means to receive flow from a location downstream of said compressor as bypass flow, to direct said bypass flow along a path bypassing said turbine first stage and exhaust said bypass flow to pass through said turbine second stage,

i. bypass valve means to control the amount of flow bypassed through said turbine bypass means,

j. engine control means operatively connected to said fuel injection and ignition means and to said bypass valve means, in a manner to control the amount of fuel directed to said fuel injection and ignition means and to control said bypass valve means in a manner to control the amount of bypass flow through said turbine bypass means,

a method of operating said jet engine, said method comprising: controlling the amount of fuel directed to said fuel injection and ignition means and controlling said bypass valve means in a manner to control the amount of bypass flow through said turbine bypass means so that said bypass valve means is at a more open position at higher engine thrust settings where higher temperatures are created in said combustion chamber, and at a more closed position at lower engine thrust settings where lower temperatures are created in said combustion chamber, in a manner that there is substantially constant corrected gaseous flow into said turbine, and said bypass flow is directed through said turbine second stage, said corrected flow being measured according to the formula:

$$\text{corrected gaseous flow} = \frac{W\sqrt{\theta_t}}{\delta_t}$$

where:

W = Total Mass Flow Rate in lbs. per second

θ_t = Observed temperature (absolute) divided by standard temperature (518.67° R)

δ_t = Observed pressure divided by standard pressure (2116.22 lbs./sq. ft.)

whereby during subsonic cruise said engine can operate at a relatively low specific fuel consumption with high compression ratio and low combustion exit temperature, in a condition where said valve bypass means is at a substantially closed position, during high power acceleration mode, said engine can operate at high combustion exit temperatures in a condition where said valve bypass means is in a more open position to maintain constant corrected flow through said turbine to satisfy the turbine requirements, and during supersonic cruise mode the engine can operate efficiently at relatively high combustion exit temperatures.

4,448,020

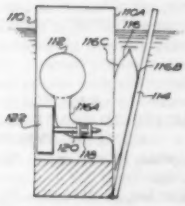
ENERGY GENERATING DEVICE

Eric Wood, Northants, and Norman W. Bellamy, Coventry, both of England, assignors to Sea Energy Associates Ltd., Feltham, England

Continuation-in-part of Ser. No. 120,265, Feb. 11, 1980, abandoned. This application Jul. 14, 1982, Ser. No. 398,431

Int. Cl.³ F03B *13/12*

U.S. Cl. 60—398 **12 Claims**



1. Energy conversion apparatus for generating energy from the wave motion of a body of liquid comprising a reaction body providing a reaction side facing oncoming waves, said reaction body carrying a flexible gas pump bag having front and rear sides of which the front side is deflected by an oncoming wave while the rear side obtains reactive support from the reaction side of the body whereby the bag is compressed by the oncoming wave and the bag expands when the wave recedes, means enabling the pumping of gas from the interior of the bag when compressed and the intake of fluid to the interior of the bag when it expands, and means for converting this movement of fluid into output energy in a more readily usable form.

4,448,021

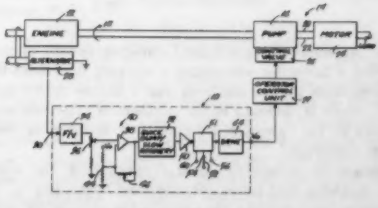
ANTI-STALL CONTROL

Royal R. Hawkins, Bloomington, Minn., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Jan. 21, 1982, Ser. No. 341,238

Int. Cl.³ F16H *39/46*

U.S. Cl. 60—449 **11 Claims**



1. In a system having an engine which drives a pump to supply fluid under pressure to a motor and including means

responsive to a control voltage for altering the flow of fluid to the motor, an anti-stall control comprising:

means for sensing the speed of said engine, said means generating a voltage having an amplitude proportional to said speed;

means for comparing said speed voltage to a reference voltage, said comparing means generating a D.C. signal having an amplitude proportional to said speed voltage;

means for generating a control voltage in response to said D.C. signal, said control voltage having a maximum amplitude proportional to said D.C. signal when said speed voltage is equal to said reference voltage and having a decreased amplitude proportional to said D.C. signal when said speed voltage is less than said reference voltage;

means responsive to a decrease in the amplitude of said D.C. signal for decreasing the control voltage from said maximum amplitude to said decreased amplitude at a first rate; and

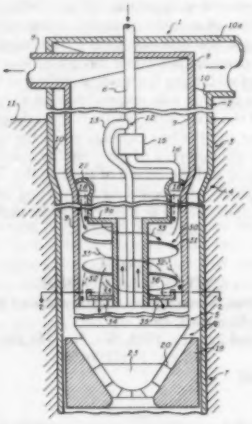
means responsive to an increase in said D.C. signal for increasing the control voltage from said decreased amplitude to an increased amplitude at a second rate less than the first rate.

4,448,022

DOWNHOLE LIQUID TRAP FOR A GEOTHERMAL PUMPING SYSTEM

Andrej M. R. Aplenc, Hines County, Miss., assignor to Sperry Corporation, New York, N.Y.

Filed Jun. 18, 1981, Ser. No. 274,838
Int. Cl.³ F03G 7/00
U.S. Cl. 60—641.4 **6 Claims**



1. An improved geothermal pumping system of the type having a boiler for vaporizing a working fluid with thermal energy from geothermal brine and a turbine driven pumping unit which is disposed in the geothermal brine and which is driven by the vaporized working fluid, wherein the improvement comprises:

means for separating liquid droplets from the vaporized working fluid exhausted from said boiler; and

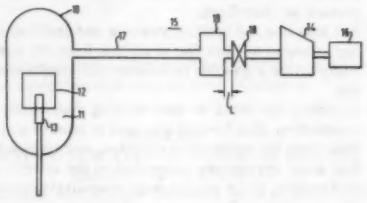
means for collecting the separated liquid and for returning the liquid in a vaporized form to the vaporized working fluid exhausted from said turbine pumping unit.

4,448,023

PRESSURE WAVE ATTENUATING MAIN STEAM LINE APPARATUS

Mutsihiro Arinobu, Tokyo, and Isamu Suzuki, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Sep. 11, 1981, Ser. No. 301,818
Claims priority, application Japan, Oct. 20, 1980, 55-146423
Int. Cl.³ G12D 5/00
U.S. Cl. 60—644.1 **1 Claim**



1. A main steam line apparatus for use in carrying steam from a pressure vessel to a turbine in a boiling water nuclear reactor plant, the apparatus comprising:

(a) piping connecting the pressure vessel with the turbine;

(b) a main stream valve for rapidly stopping the flow of steam being supplied to the turbine through said piping, said main steam valve being located in said piping between the pressure vessel and the turbine; and

(c) a header for attenuating the pressure wave which occurs in said piping when said main steam valve is closed rapidly and for suppressing the increase in pressure in the pressure vessel due to the pressure wave, said header being located in said piping between the pressure vessel and said main stream valve,

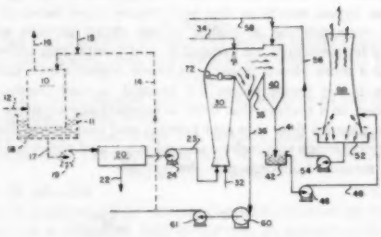
wherein the distance between said header and said main steam valve is less than A·Tv, where A is the sound propagation velocity in the steam and Tv is the closing time of said main steam valve.

4,448,024

RECOVERY OF ENTHALPY FROM HOT FLUIDS

Alberto E. Molini, Quinta Paso Estrecho, San German, P.R. 00753, and Clarence Zener, 3955 Bigelow Blvd., Pittsburgh, Pa. 15213

Continuation-in-part of Ser. No. 46,668, Jun. 8, 1979, Pat. No. 4,308,722. This application Sep. 18, 1981, Ser. No. 303,385
The portion of the term of this patent subsequent to Jan. 5, 1999, has been disclaimed.
Int. Cl.³ F01K 25/06
U.S. Cl. 60—649 **13 Claims**



1. A method for concurrently recovering enthalpy and removing pollutants from a hot liquid industrial effluent comprising:

a. cleansing the hot effluent to remove pollutants therefrom,

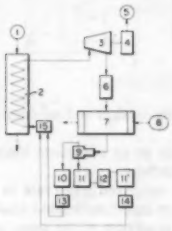
b. conducting the effluent into a flashing unit having an inlet and an outlet and operating with a pressure differential between its inlet and outlet such that the differential will induce a flow of fluid within the flashing unit,
c. flashing the effluent into a foam, and
d. providing turbine means operably connected to the flashing unit such that a flow of the foam will propel the turbine.

4,448,025

PROCESS FOR RECOVERING EXHAUST HEAT

Kenichi Oda, 4-4-24, Tsujidomotomachi, Fujisawa, Japan

Filed Jul. 22, 1981, Ser. No. 286,006
Claims priority, application Japan, Aug. 1, 1980, 55-106630
Int. Cl.³ F01K *25/10*
U.S. Cl. 60—651 **4 Claims**



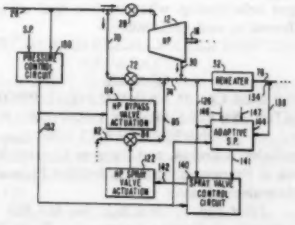
1. A process for recovering heat using the working fluid in a turbine characterized in that the working fluid is a mixture of 30 to 80 mole % water and toluene, wherein said water and toluene mixture is insoluable at ambient temperature and wherein the vapor cycle heat energy in the temperature range of 400° to 750° C. is converted into work.

4,448,026

TURBINE HIGH PRESSURE BYPASS PRESSURE CONTROL SYSTEM

Morton H. Binstock, Pittsburgh, Pa.; Thomas H. McCloskey, Palo Alto, Calif., and Leaman B. Podolsky, Wilmington, Del., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 25, 1981, Ser. No. 305,813
Int. Cl.³ F22B *35/00*
U.S. Cl. 60—662 **15 Claims**



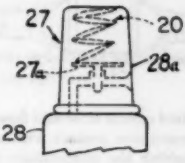
1. Apparatus for controlling the outlet throttle pressure of a steam generator in a steam turbine system having a steam bypass path for bypassing said turbine, comprising:
(A) valve means in said bypass path for controlling the introduction of steam into said bypass path;
(B) means for generating a desired throttle pressure set point signal which is variable as a function of load and independent of steam flow;
(C) means for measuring said throttle pressure of said steam generator for providing an actual throttle pressure signal; and
(D) control means for governing operation of said valve means as a function of said actual throttle pressure signal and said desired throttle pressure set point signal.

4,448,027

CARTRIDGE CONTAINING WATER EXPANDABLE MEMBERS

Charles J. Hsu, P.O. Box 460, Grand Central Station, New York, N.Y. 10017

Filed Aug. 26, 1981, Ser. No. 296,558
Int. Cl.³ F01B *29/00*
U.S. Cl. 60—721 **9 Claims**



1. A cartridge arranged to expand in the presence of liquid water comprising a plurality of packet-like members, each said packet-like member comprising a water permeable flexible cover arranged to form a closed pocket, a quantity of a dry material located in said pocket with the material being such that it expands to a multiple number of volumes greater than the original dry volume when the material is contacted by liquid water, the amount of material placed in said pocket is limited so that it is sufficient to form a thin layer within said pocket when the material is in the dry state, the cover of said packet-like member comprising a pair of correspondingly shaped oppositely disposed polygonally sided generally planar sides with said material forming a layer between said sides, said packet-like members arranged one superposed on another with adjacent said planar sides of said packet-like members disposed in generally contacting relation and said sides having the corners thereof in alignment, and means for interconnecting said packet-like members around the edges of said sides at least at two oppositely located said sides so that they are secured together as a unit whereby when water passes through said cover and contacts said material, said material expands and greatly increases the volume thereof and the volume of said unit of said packet-like members while said interconnecting means retains said packet-like members in the unit form, said interconnecting means comprising a tape-like strip extending between the peripheral edges of said packet-like members of said cartridge with said tape being fixed to the edges of said packet-like members.

4,448,028

THERMOELECTRIC SYSTEMS INCORPORATING RECTANGULAR HEAT PIPES

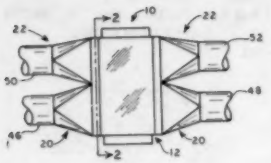
Shun-lung Chao, Troy, and Richard A. Vining, Bloomfield Hills, both of Mich., assignors to ECD-ANR Energy Conversion Company, Troy, Mich.

Filed Apr. 29, 1982, Ser. No. 373,179
Int. Cl.³ F25B *21/02*; H01L *35/30*
U.S. Cl. 62—3 **25 Claims**

1. A compact thermoelectric system for generating electrical energy from a temperature difference between a flowing heated fluid and a flowing cold fluid, said system comprising:
a thermoelectric device, said device being disposed between and in thermally transmissive contact with both a heat pipe in contact with one side thereof and said flowing cold fluid on another side thereof, whereby electrical energy is generated and current flows from the hot side to the cold side in response to the temperature difference;

the thermally transmissive contact being provided by at least one closed heat pipe containing a working fluid therein and in thermally transmissive contact with the flowing heated fluid and the thermoelectric device

said heat pipe being disposed within said flowing heated fluid, said heat pipe extending externally from said flowing heated fluid and having at least one integral substantially planar surface adapted to be in thermally transmissive contact with said thermoelectric device; and



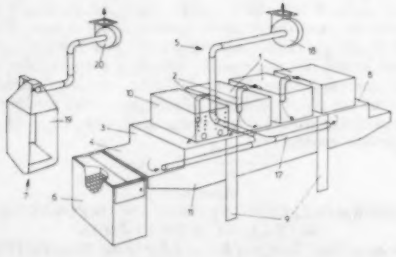
a flowing cold fluid remote from said flowing heated fluid, in thermally transmissive contact with said thermoelectric device to establish the temperature differential at said thermoelectric device, said temperature differential substantially simultaneously generating an electrical current across the thermoelectric device and condensing working fluid.

4,448,029

PROCESS FOR QUICK FREEZING AND CONDITIONING INDIVIDUAL PRODUCTS, AND APPARATUS FOR PRACTICING THIS PROCESS

Jean-Paul Keller, 15, rue des Remparts, Balgau (Haut-Rhin), France

Filed Jun. 1, 1982, Ser. No. 384,083
Claims priority, application France, May 29, 1981, 81 10847; Apr. 23, 1982, 82 07197
Int. Cl.³ F25D *13/06*
U.S. Cl. 62—63 **13 Claims**



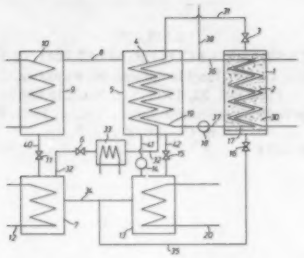
1. Process for quick freezing and conditioning of individual products, comprising treating small individual quantities of products in individual modular quick-freeze chambers (1) fed with cryogenic gas, treating larger quantities of piece products in a tunnel (3) provided with a conveyor belt (4), and which is also fed with cryogenic gas, evacuating cryogenic gas from the chambers (1) to the tunnel (3) to cool the tunnel, evacuating the residual warmed gas obtained from the interior of the tunnel (3), packaging the products leaving the tunnel in insulating packaging disposed in a receiver (6) mounted at the outlet of said tunnel (3), then surrounding the assembly of products disposed in the packaging with a cryogenic product, and closing the packaging.

4,448,030

COMBINED STAGED AIR CONDITIONER AND HEAT STORE

Gerald Moss, Wantage, England, assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Dec. 2, 1981, Ser. No. 326,532
Int. Cl.³ F25B *7/00*
U.S. Cl. 62—79 **5 Claims**



1. A combined absorption and adsorption process comprising:

(a) supplying heat to an adsorbate loaded adsorbent to vaporize the adsorbate:

(b) placing said vaporized adsorbate in heat exchange relationship with an absorbate loaded adsorbent in a generator in which the absorbate is the same as the adsorbate and whereby the vaporized adsorbate is condensed and the absorbate is removed from the absorbent;

(c) circulating absorbate depleted absorbent through an absorber wherein absorbate is replenished and returned to said generator;

(d) vaporizing said condensed adsorbate by first passing the condensed adsorbate through a heat exchanger and then an expansion valve and finally an evaporator;

(e) passing said vaporized absorbate through a condenser thereby condensing said absorbate;

(f) evaporating said absorbate by passinbg the absorbate through an expansion valve and finally said evaporator;

(g) combining said adsorbate and said absorbate;

(h) supplying a portion of said combined adsorbate and absorbate to said absorbent in said absorber to reabsorb the absorbate;

(i) supplying a portion of said combined adsorbate and absorbate to said adsorbent thereby generating heat of adsorption; and

(j) placing said absorbent and said generator and heat exchanger relationship whereby the heat of adsorption is transferred to said generator.

4,448,031

PROCESS FOR COLD AND/OR HEAT PRODUCTION WITH USE OF CARBON DIOXIDE AND A CONDENSABLE FLUID

Alexandre Rojey, Garches, and Jacques Cheron, Maisons Laffitte, both of France, assignors to Institut Francais du Petrol, Rueil-Malmaison, France

Filed Jan. 7, 1983, Ser. No. 456,463
Claims priority, application France, Jan. 7, 1982, 82 00272
Int. Cl.³ F25B *15/00*
U.S. Cl. 62—101 **4 Claims**

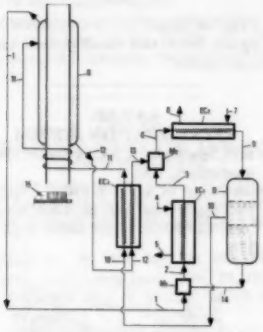
1. A process for cold and/or heat production

(a)—contacting a solvent liquid phase (S) with a gas phase comprising both an auxiliary fluid (F) and carbon dioxide, in an absorption/condensation step, so as to obtain a solution of carbon dioxide in the solvent (S) and a liquid phase of the fluid (F), the liquid phase of the fluid (F) being at least partly immiscible with the solution of carbon dioxide in the solvent (S), the fluid (F) being vaporizable under

the conditions of the hereinafter set forth step (e) and condensable under the conditions of step (a), and transferring the heat released by the absorption of carbon dioxide into the solvent (S) and the heat released by the condensation of the fluid (F) to an external fluid,

(b)—separating the solution of carbon dioxide in the solvent (S) from the liquid phase of the fluid (F),

(c)—supplying the solution of carbon dioxide in the solvent (S) to a desorption step and subjecting this solution to desorption conditions, the desorption heat being received from an external fluid, so as to obtain a solvent liquid phase of reduced carbon dioxide content and a vapor phase of high carbon dioxide content, and recycling said solvent liquid phase of reduced carbon dioxide content to



the absorption/condensation step (a) to constitute therein the solvent liquid phase (S),

(d)—admixing at least a portion of the liquid phase formed by condensation of the fluid (F), obtained in the absorption/condensation step (a) and separated in the step (b), with at least a portion of the carbon dioxide gas phase obtained in the step (c) of desorbing carbon dioxide from its solution in the solvent (S),

(e)—subjecting the mixture obtained in step (d) to an evaporation step, the heat required for evaporating the fluid (F) being received from an external fluid, and recovering a gas phase composed of a mixture of fluid (F) vapor with carbon dioxide, and

(f)—subjecting the gas phase obtained in step (e) to an aborption/condensation step (a).

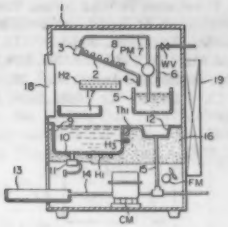
4,448,032

ICE-MAKING AND FRESH WATER DISPENSING APPARATUS

Takashi Hibino, and Yoshinori Ito, both of Toyoake, Japan, assignors to Hoshizaki Electric Co., Ltd., Tokyo, Japan

Division of Ser. No. 297,972, Aug. 31, 1981, Pat. No. 4,370,865. This application Sep. 23, 1982, Ser. No. 422,431
Claims priority, application Japan, Feb. 26, 1979, 54-20780
Int. Cl.³ B01D *9/04*; C02F *1/22*
U.S. Cl. 62—124 **1 Claim**

1. An ice making and fresh water dispensing apparatus, comprising in combination: an ice making unit for making pure ice cubes using a refrigeration system, said ice cubes dropping down by gravity from said ice making unit when an ice removing cycle of said refrigeration system is completed; a tank disposed on a path, along which said ice cubes drop down by gravity, to receive said ice cubes; means disposed on the bottom surface of said tank for heating the ice cubes received in said tank thereby to melt the same into fresh water; means attached to said tank for dispensing the fresh water stored therein; and an ice storage box removably disposed between said ice making unit and said tank, said ice storage box extending partly across said ice cube path so that the ice cubes falling down from said ice making unit are received partly in said ice



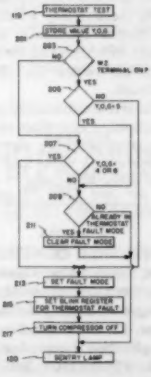
storage box and partly in said tank without passing through the interior of said ice storage box.

4,448,033

THERMOSTAT SELF-TEST APPARATUS AND METHOD

Mario F. Briccetti, Liverpool, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Mar. 29, 1982, Ser. No. 362,786
Int. Cl.³ F25B *49/00*; G05D *23/00*
U.S. Cl. 62—126 **10 Claims**



1. A method of detecting a fault in the wiring of a thermostat of an air conditioning system wherein the thermostat has a series of outputs which are energized under the appropriate conditions in known patterns to effect operation of the air conditioning system which comprises the steps of:

determining which outputs of the thermostat are energized;

comparing the status of the outputs ascertained by the step of determining with the known pattern of legal thermostat outputs; and

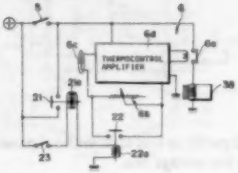
indicating a fault condition when the step of comparing detects that the outputs ascertained by the step of determining are other than a known pattern.

4,448,034

AIR-CONDITIONING SYSTEM FOR AN AUTOMOTIVE VEHICLE

Yukio Shimada, Yokohama; Tetsuya Iijima, Yamato, and Mikio Tanino, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Mar. 18, 1982, Ser. No. 359,351
Claims priority, application Japan, Mar. 19, 1981, 56-38645
Int. Cl.³ F25D *29/00;* **B60H** *3/04, 1/00*
U.S. Cl. 62—161 **7 Claims**



1. An air-conditioning system provided with a compressor, an evaporator, and a temperature-adjusting lever, which comprises:

(1) a thermorelay connected in series with the compressor for operating the compressor when energized;

(2) a temperature-sensitive element disposed on the downstream side of the evaporator for detecting air temperature, the resistance of said element decreasing with increasing temperature,

(3) a variable resistor connected in series with said temperature-sensitive element, and linked with the temperature-adjusting lever in such a way that the resistance of said variable resistor is adjusted when the temperature adjusting lever is shifted;

(4) a thermocontrol amplifier responsive to the total resistance of said temperature-sensitive element and said variable resistor for energizing said thermorelay when the sum of temperature-sensitive element resistance and variable resistor resistance drops below a predetermined value and deenergizing said thermorelay when the sum of temperature-sensitive element resistance and variable resistor resistance exceeds another predetermined value; and

(5) a dehumidification switch for shorting said variable resistor when closed,

whereby when said dehumidification switch is closed, said thermocontrol amplifier energizes said thermorelay when only the temperature-sensitive element resistance drops below the predetermined value and independently of the resistance of the variable resistor.

4,448,035

AIR CONDITIONER CONTROL SYSTEM

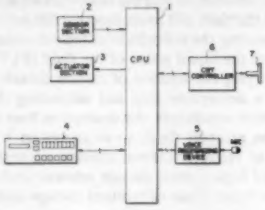
Masakazu Moriyama; Takao Saito; Akinori Ido; Takeo Matsushima, and Hisao Hara, all of Aichi, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Apr. 13, 1982, Ser. No. 367,906
Claims priority, application Japan, Apr. 20, 1981, 56-60293
Int. Cl.³ F25D *17/04;* **B60H** *3/00*
U.S. Cl. 62—176.6 **11 Claims**

1. An air conditioner control system comprising:

a memory medium for storing control modes in which the comfortability of a vehicle is taken into consideration; and

a central process unit having a control program corresponding to at least one of a plurality of controls including a compressor control, a recirculation/fresh air change-over control, a blow-out opening change-over control, an air flow rate control, a condensation control and an air purification control and performing said control program in response to outputs from various sensors, external instructions, and data from said memory medium, said sensors including at least a condensation sensor for detecting humidity and a temperature sensor for detecting ambient air temperature, whereby said condensation control performs a regulation of a blow-out air flow rate and a control of a rear defogger and a compresor in response to output signals from said condensation sensor and said temperature sensor.

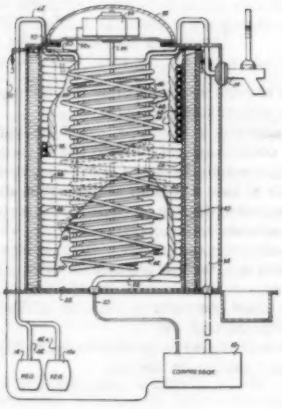


4,448,036

REFRIGERATION SYSTEM

Frank M. Iannelli, Spartanburg, S.C., assignor to Geriach Industries Inc., Spartanburg, S.C.

Continuation-in-part of Ser. No. 316,873, Oct. 30, 1981, abandoned. This application Apr. 18, 1983, Ser. No. 486,252
Int. Cl.³ F25D *17/00;* **B67D** *5/62*
U.S. Cl. 62—178 **3 Claims**



1. A refrigeration system for cooling a beverage as said beverage is withdrawn from a container comprising:

a housing having a vertically extending wall and a top and bottom;

water carried within said housing;

an evaporator coil carried adjacent the wall of said container extending vertically from adjacent the bottom of said container to adjacent the top of said container;

refrigeration condensing means circulating a refrigerant through said evaporator coil cooling said water carried in said container and building an ice bank along the inner wall of said container;

a pair of vertically extending beverage dispensing coils centrally carried within said container;

said beverage dispensing coils having a predetermined outside diameter so as to provide a space between said inside wall of said container and said beverage dispensing coils for allowing said bank of ice to build up on said inside wall;

a faucet connected to each of said beverage dispensing coils;

said beverage dispensing coils being connected between said

container and said faucets for cooling said beverage as said beverage is drawn from said faucet;

a power driven paddle carried within said beverage dispensing coils for gently circulating water carried in said housing against said ice bank for cooling said water and said beverage dispensing coil;

inlet ends of said beverage dispensing coils being positioned side by side to form a junction;

a first temperature sensor carried within said housing between said ice bank and said beverage dispensing coils for deactivating said refrigeration condensing means responsive to the temperature of said water dropping below a predetermined temperature;

a second temperature sensor carried in said junction in heat transfer relation with said inlet ends of said beverage dispensing coils for sensing when beverage is being drawn from one of said containers; and

means for operably connecting said second temperature sensor to said power driven paddle for activating said paddle responsive to beverage being drawn from either of said faucets.

4,448,037

COMBINED AIR CONDITIONING AND HOT WATER SERVICE SYSTEM

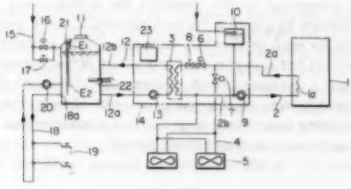
Hiroaki Hama; Masami Imanishi, both of Wakayama; Yasuyuki Funahashi, Kainan, and Seiichi Kato, Wakayama, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 19, 1983, Ser. No. 459,120

Claims priority, application Japan, Jan. 29, 1982, 57-14495; Jan. 29, 1982, 57-14496; Jan. 29, 1982, 57-14497; Jan. 29, 1982, 57-14498

Int. Cl.³ F25D *17/02*; G05D *23/00*

U.S. Cl. 62—188 **4 Claims**



1. A combined heating/cooling and hot water service system comprizing a heat pump type chiller unit designed to effect a cooling cycle and a heating cycle, a water circuit communicating with a water-side heat exchanger of the chiller unit, a heat exchanger in said water circuit, adapted for supplying hot water, a fan coil unit for heating/cooling the room, said fan coil unit communicating with said water circuit and connected in parallel with said heat exchanger adapted for supplying hot water, changeover valves for selectively switching said water circuit for cooperation with said heat exchanger adapted for supplying hot water or with said fan coil unit; a reservoir for hot water having a water heating circuit placed in heat exchange relation with said heat exchanger for supplying hot water, a hot water service circuit for supplying the hot water from said reservoir to hot water service spots through said hot water pump, a first program timer operable for setting a hot water storage time zone in which the changeover valves are switched so that the heat exchanger adapted for supplying hot water comes into operation and hot water is stored through said water heating circuit in said reservoir, said first program timer being further operable for setting a heating/cooling time zone in which the changeover valves are switched so that the fan coil unit comes into operation for heating or cooling the room, and a second program timer operable for setting a hot water service time zone which is included in said heating/cooling time zone and in which said hot water pump is activated for serving the hot water from said reservoir through said hot water service circuit.

4,448,038

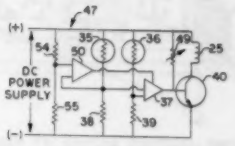
REFRIGERATION CONTROL SYSTEM FOR MODULATING ELECTRICALLY-OPERATED EXPANSION VALVES

William J. Barbier, St. Louis, Mo., assignor to Sporlan Valve Company, St. Louis, Mo.

Division of Ser. No. 80,398, Oct. 1, 1979, Pat. No. 4,362,027, which is a continuation-in-part of Ser. No. 865,903, Dec. 30, 1977, abandoned. This application Aug. 4, 1982, Ser. No. 405,251

Int. Cl.³ F25B *41/04*

U.S. Cl. 62—212 **2 Claims**



1. In a refrigeration system including a compressor, a condensor, and an evaporator operatively connected, the system comprising:

(a) a modulating, electrically operated expansion valve connected to the inlet of the evaporator,

(b) first and second temperature-responsive electrical sensors, the first sensor being positioned to respond to the temperature of liquid refrigerant expanded to suction pressure, and the second sensor being positioned to respond to suction line sensible temperature,

(c) an electrical amplifier circuit connecting the sensors to the valve for modulation of the opening and closing of the valve in response to the differences in the temperatures sensed by the sensors, and

(d) the electrical amplifier circuit including a detector for determining whether the suction saturation temperature exceeds a maximum set point, and actuating the expansion valve to close and limit the suction saturation temperature.

4,448,039

LATENT-HEAT HEATING AND COOLING SYSTEM

Robert D. Hutchins, 221 E. Pebble Beach, Tempe, Ariz. 85282

Filed Sep. 17, 1982, Ser. No. 419,225

Int. Cl.³ F25B *27/00*

U.S. Cl. 62—235.1 **20 Claims**

1. A method for collecting, transferring and storing energy through change-of-state between liquid and vapor phases of a heat exchange transmission medium comprising the steps of:

pumping a heat exchange medium in its liquid state into a solar evaporation means;

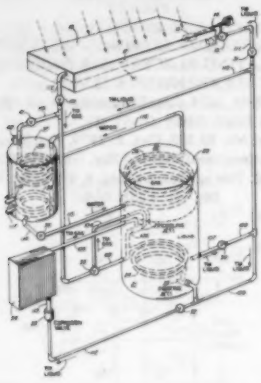
irradiating said solar evaporation means with solar radiation to evaporate the heat exchange medium from its liquid state into its gaseous state within said evaporation means to add latent heat to said heat-exchange medium, and to add superheat to said medium in its gaseous state;

maintaining said evaporation means under a predetermined lower pressure condition to reduce the boiling point of said evaporating heat exchange medium and increase the efficiency of the method;

evacuating said heat exchange medium in its gaseous state from said solar evaporation means by vacuum-induced suction into a remote heat exchanger for the recovery of said latent heat and said super heat therefrom;

transferring the latent heat of said heat exchange medium

within said remote heat exchanger to said heat exchange medium in its liquid state; and



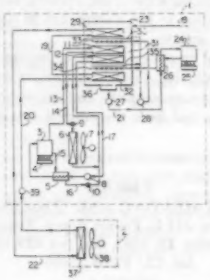
spraying said heat exchange medium through a venturi jet means for compressing and condensing said heat exchange medium from said heat exchange medium's gaseous state to its liquid state.

4,448,040

ABSORPTION TYPE HEAT PUMP SYSTEM

Yoshifumi Kunugi, Ibaraki, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 8, 1982, Ser. No. 396,375
Claims priority, application Japan, Jul. 10, 1981, 56-106991
Int. Cl.³ F25B *27/02, 15/00*
U.S. Cl. 62—238.3 **13 Claims**



1. A absorption type heat pump system comprising a first heat pump of the absorption type and a second heat pump of the absorption type, said first heat pump of the absorption type comprising a generator equipped with a heating source, a condenser, an evaporator, an absorber, and a solution heat exchanger for supplying hot water for heating and hot water supply purposes from said condenser and said absorber, and said second heat pump of the absorption type comprising a generator equipped with a heating source, a condenser, an evaporator, an absorber, and a solution heat exchanger, wherein the improvement resides in that:

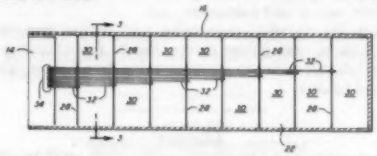
said condenser and said absorber of said second heat pump of the absorption type are both mounted in said evaporator of said first heat pump of the absorption type, and the evaporator of the first heat pump is connected with the second heat pump, in a manner so as to cause heat given off by said condenser and said absorber of said second heat pump to be utilized as a heat source for vaporizing a refrigerant in said evaporator of said first heat pump, a refrigerant in the condenser of the second heat pump to be condensed by heat of evaporation of the refrigerant in the evaporator of the first heat pump and the condensed refrigerant absorbed by an absorbing agent in the absorber of the second heat pump.

4,448,041

VACUUM INSULATED WALLS FOR REFRIGERATED CONTAINERS AND TRAILERS

John V. D. Southworth, Jr., Cazenovia, N.Y., assignor to Trans Refrigeration International, Inc., East Syracuse, N.Y.

Filed Sep. 29, 1982, Ser. No. 426,926
Int. Cl.³ F25B *19/00*
U.S. Cl. 62—268 **4 Claims**



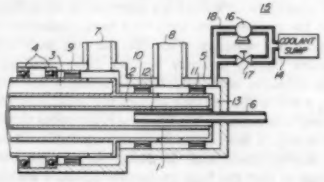
1. In a refrigerated container or trailer, an insulated structural member adapted for use as a sidewall, ceiling or floor of the container, the structural member comprising an interior and an exterior wall of like dimensions, means securing the walls together in spaced relation to one another whereby an airtight compartment is formed between the walls, means for dividing said airtight compartment into a plurality of individual airtight sections, a manifold in the container, a conduit extending from each airtight section to the manifold, a vacuum pump connected to the manifold for withdrawing air from each section to create a vacuum therein, a check valve in the conduit for each section that permits air to be withdrawn from the section but prevents the flow of air in the opposite direction, and a pressure switch in communication with the manifold for detecting an increase in pressure therein, the pressure switch being operable in response to a predetermined pressure increase to actuate the vacuum pump.

4,448,042

COOLANT SUPPLY AND DISCHARGE DEVICE FOR SUPERCONDUCTIVE ROTOR

Kiyoshi Yamaguchi, Hitachi, and Naoki Maki, Ibaraki, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 29, 1982, Ser. No. 437,675
Claims priority, application Japan, Oct. 31, 1981, 56-175314
Int. Cl.³ F25B *31/00*
U.S. Cl. 62—505 **2 Claims**



1. A coolant supply and discharge device for a superconductive rotor comprising:

an inlet tube connected to an end portion of the superconductive rotor to introduce a coolant in a liquid state into said superconductive rotor;

an inner discharge tube and an outer discharge tube located

at the outer periphery of said inlet tube to recover the coolant in a gaseous state;

a fixed casing located at the outer periphery of said outer discharge tube through bearings in a manner to enclose said inlet tube and said inner and outer discharge tubes;

a feed tube extending into said fixed casing and having an open end portion located in said inlet tube to feed the coolant in the liquid state into the inlet tube; and

withdrawing means located at an end portion of said fixed casing to withdraw a predetermined amount of gaseous coolant produced in a clearance between said feed tube and said inlet tube to a coolant sump located outside said fixed casing through a space in said fixed casing communicating with said inlet tube.

4,448,043

HEAT EXCHANGER WITH A CAPILLARY STRUCTURE FOR REFRIGERATION EQUIPMENT AND/OR HEAT PUMPS AND METHOD OF MAKING THE SAME

Yvan Aragou, 32, Hameau de Russac, 33400 Talence, France

Filed Feb. 11, 1982, Ser. No. 347,970

Claims priority, application France, Feb. 13, 1981, 81 03033

Int. Cl.³ F25B *39/02*

U.S. Cl. 62—515 **15 Claims**

1. In a heat exchanger for refrigeration equipment and/or heat pumps, in which the heat exchanger comprises an array of tubular elements, the invention comprising an annular capillary structure arranged in said tubular elements and comprising a series of individual, smooth, rectilinear fibers of suitable material arranged parallel to the longitudinal axes of said tubular elements, said fibers being regularly positioned in annular zones along the inner walls of said tubular elements, and means for urging said fibers against said inner walls of said tubular elements.

4,448,044

SLIDER NEEDLE

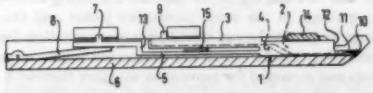
Gottfried Kühnert, Aalen, Fed. Rep. of Germany, assignor to Universal Maschinenfabrik Dr. Rudolf Schieber GmbH & Co., KG, Westhausen, Fed. Rep. of Germany

Filed Dec. 17, 1982, Ser. No. 450,696

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1981, 3151225

Int. Cl.³ D04B *35/04*

U.S. Cl. 66—120 **6 Claims**



1. A slider needle for knitting machines, particularly flat knitting machines, comprising a needle body with needle hook and needle butt, and a slider with a slider butt mounted to be displaceable relative to the needle body, the needle body comprising a guide shaft having a slot for receiving and guiding the slider and a flexible shaft extending from the guide shaft and projecting rearwardly from the guide shaft towards the needle butt, and the flexible shaft carrying the needle butt being engageable from below in the needle channel by a tilting lever.

4,448,045

SLIDER NEEDLE

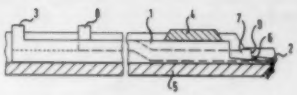
Gottfried Kühnert, Aalen, Fed. Rep. of Germany, assignor to Universal Maschinenfabrik Dr. Rudolf Schieber GmbH & Co. KG, Westhausen, Fed. Rep. of Germany

Filed Dec. 17, 1982, Ser. No. 450,697

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1981, 3151150

Int. Cl.³ D04B *35/04*

U.S. Cl. 66—120 **5 Claims**



1. A slider needle for knitting machines, particularly flat knitting machines, comprising a needle body with needle hook and at least one needle butt, and a slider with slider butt mounted to be displaceable relative to the needle body, in which a short swivel detent is mounted on the needle body behind the needle hook, the length and shape of the swivel detent being selected so that in the normal position of the needle with the needle hook closed by the slider the swivel detent is masked by the slider in each pivoted end position of the detent, whereas with the needle hook open the swivel detent projects proud of the needle body and above the slider in its two end positions.

4,448,046

ELECTROMAGNETICALLY ACTUATED JACQUARD CONTROL ARRANGEMENT

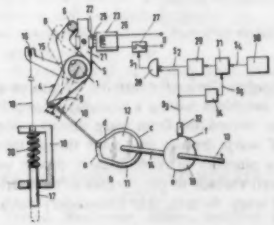
Kresimir Mista, Obertshausen, and Hans-Jurgen Hohne, Hainburg, both of Fed. Rep. of Germany, assignors to Karl Mayer Textilmaschinenfabrik GmbH, Obertshausen, Fed. Rep. of Germany

Filed Dec. 1, 1982, Ser. No. 445,950

Claims priority, application Fed. Rep. of Germany, Dec. 4, 1981, 3148054

Int. Cl.³ D04B *23/04*

U.S. Cl. 66—205 **13 Claims**



1. An electromagnetically controlled jacquard arrangement for a machine having working cycles controlled by a main shaft, comprising:

a plurality of control elements rotatably mounted to reciprocate in said machine and biased to rotate in a first direction;

a plurality of electromagnetic devices, each operable to hold magnetically a corresponding one of said control elements in a predetermined position;

synchronization means coupled to and reciprocated by said main shaft for repetitively urging said control elements to

rotate in a second direction and lace them proximate to said electromagnetic device at the start of each of the working cycles; and

switching means operable over successive working cycles to energize sequentially, given ones of said electromagnetic devices according to a predetermined pattern, said switching means including timing means for maintaining energization in existence at the beginning of each of the working cycles and throughout a major portion of each of the working cycles.

4,448,047

EMBROIDERY DEVICE FOR CROCHET MACHINES

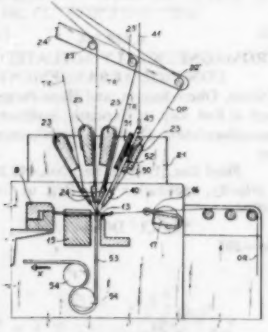
Rancati Romano, Cilavegna, Italy, assignor to Rockwell Rimoldi, S.p.A., Milan, Italy

Filed Aug. 4, 1982, Ser. No. 404,992

Claims priority, application Italy, Jan. 29, 1982, 19360 A/82

Int. Cl.³ D04B *23/00*

U.S. Cl. 66—207 **8 Claims**



1. An embroidery device for forming designs on a base fabric with crochet machines having a plurality of needles mounted for movement toward and from warp thread guides for forming chains of warp threads and weft thread tubular guides mounted on a plurality of rectangularly driven bar members for feeding weft threads to the needles to be interlocked with the chains of warp threads, said embroidery device comprising:

(a) means mounted on one of the rectangularly driven bar members for guiding a plurality of embroidery threads;

(b) supplementary vertical drive means operatively connected to said guiding means for elevating selected embroidery threads to effect their insertion within the chains of warp threads when no designs are to appear on the base fabric; and

(c) means returning the selected embroidery threads to their initial position upon completion of the function of said supplementary drive means to effect the formation of visible designs on the base fabric.

4,448,048

CONTINUOUS LINE FOR IRRADIATION AND CHEMICAL TREATMENT OF TEXTILE WEBS

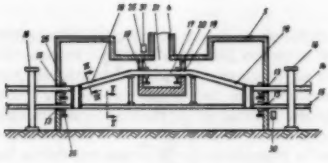
Vadim K. Burov; Boris M. Vanjuskin; Anatolij E. Voskoboev; Nikolaj G. Kon'kov; Vsevolod D. Orechov; Konstantin D. Pismannik, all of Moscow; Michail P. Svin'in; Michail I. Fedotov, both of Leningrad, all of U.S.S.R.; Werner Dameran, Kambs/Bützow, German Democratic Rep.; Achim Dulling; Adolf Heger, both of Dresden, German Democratic Rep.; Gerd Reichardt, Gera, German Democratic Rep., and Gotthard Wilde, Berlin, German Democratic Rep., assignors to VEB Kombinat Textima, Karl Marx Stadt, German Democratic Rep.; Zentrales wissenschaftliches Forschungsinstitut der Baumwollindustrie; Allunions-Forschungsinstitut für Strahlentecknik, both of Moscow, U.S.S.R. and Allunions-Forschungsinstitut für physikalischen Apparatebau, Leningrad, U.S.S.R.

Filed Dec. 29, 1981, Ser. No. 335,396

Claims priority, application German Democratic Rep., Feb. 10, 1981, 2275203

Int. Cl.³ D06B *3/10, 23/18*

U.S. Cl. 68—5 E **6 Claims**



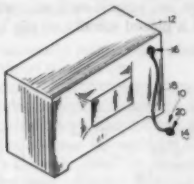
1. A progressive line for irradiation and chemical treatment of a textile web, comprising a succession of treatment stations including an irradiation station with a ray accelerator having a ray exit window for treating the textile web with electron rays; adjustable conveyor means having an upper run for holding and advancing the web between the stations, and a lower run; said irradiation station being surrounded by an outer electron ray screening protective jacket formed with outer openings for passing through at least the upper run of the conveyor means together with the web, and also including an inner electron ray screening protective jacket surrounding the exit window of the ray accelerator and having inner openings for passing through the upper run with the web, the inner openings and the corresponding outer openings being vertically offset relative to each other; guiding channels arranged in the irradiation station for guiding and protecting the upper and lower runs of the conveyor means, the guding channel for the upper run having a central portion extending parallel to the plane of the ray exit window between said inner openings of the inner protective jacket, and two sloping lateral sections extending between the outer openings in the outer protective jacket and the inner openings, respectively; ray-shielding means including displaceable shielding blocks which are connected with the guiding channels and arranged for movement together therewith along the inner and outer openings in a plane of the textile web for adjusting a clearance between the guiding channels in dependence upon a width of the textile web and cooperating to move in two opposite directions transversely to the web feeding direction; and control means arranged to sense the movement of the displaceable shielding blocks and to thereby control the ray accelerator and the conveyor means to convey the textile web.

4,448,049

SECURITY TIE-DOWN APPARATUS

Avon R. Murray, 5031 S. 131st Street, Omaha, Nebr. 68137

Filed Jul. 2, 1982, Ser. No. 394,498
Int. Cl.³ E05B 69/00
U.S. Cl. 70—58 12 Claims



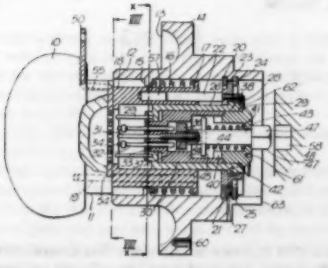
1. A security tie down apparatus comprising,
an anchor screw adapted to be fastened to an object and having a head to be positioned exteriorly of the object,
a base plate fixed to the anchor screw in axially spaced relation from the head thereof and adapted to engage the object to be secured,
a disk rotatably carried on said anchor screw and surrounding the head thereof so as to prevent grasping of the head by a wrench,
a plurality of hold-down screw holes in said base plate adapted for receiving hold-down screws to independently fasten said base plate to the object to be secured,
said disk including at least one access hole which is registerable with at least one of said hold-down screw holes to provide for the insertion and removal of a hold-down screw therethrough, and
means for securing an elongated connector to one of said anchor screw, base plate and disk.

4,448,050

LOCKS

Walter J. Nugent, and Leslie G. Nugent, both of 147 Rae St., North Fitzroy, Melbourne, Australia (3068)

PCT No. PCT/AU80/00023, 371 Date Feb. 20, 1981, 102(e) Date Feb. 3, 1981, PCT Pub. No. WO80/02857, PCT Pub. Date Dec. 24, 1980
PCT Filed Jun. 18, 1980, Ser. No. 237,133
Claims priority, application Australia, Jun. 20, 1979, PD9271
Int. Cl.³ E05B 27/10, 13/10, 17/04, 19/16
U.S. Cl. 70—223 17 Claims



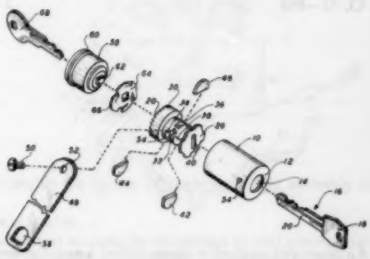
1. A key operated lock comprising, a body member having a bore therethrough adapted to be secured to a door or the like, a lock cylinder rotatably mounted in said bore of said body member, means to restrain said lock cylinder against axial movement relative to said body member, a latch actuating member adapted to be engageable with a latch release means, a handle member rotatably mounted on said body member and being axially movable relative to said bore, a substantially transverse opening in a side of said handle member, at least one ward member fixedly attached to said lock cylinder to be held against axial movement relative to said handle, releasable coupling means in said lock cylinder operable in the engaged position to connect said latch actuating member to said lock cylinder for rotation therewith, coupling actuating means movably mounted in said lock cylinder for movement from a rest position to an actuating position at which said coupling means is engaged and said latch actuating member is engaged with said latch release means, a key having a blade insertable into said transverse opening to be movable rotationally and axially with said handle, and at least one hole through said blade positoned with respect to said handle when operably inserted therein so that said ward member enters said hole by relative axial displacement of said handle to allow said key blade to engage said coupling actuating means to move it into said actuating position and said lock cylinder and latch actuating member to rotate in response to rotation of said handle to release said latch.

4,448,051

KEY RETAINING DEVICE

Hildaur L. Neilsen, 2 Juniper St., Metuchen, N.J. 08840

Continuation-in-part of Ser. No. 322,265, Nov. 17, 1981. This application Feb. 4, 1982, Ser. No. 345,722
Int. Cl.³ E05B 11/00, 73/00
U.S. Cl. 70—389 11 Claims



1. A key retaining device for capturing and selectively locking a key having a working section and handle section comprising:
a housing having at least one end wall and a side wall and having a chamber therein;
said end wall having an opening therein communicating with said chamber and dimensioned to receive said working section of said key therethrough;
at least one wedge-like member movable radially for selectively securing said key; and
means to resiliently and releasably urge said wedge-like member to engage and secure said working section of said key within said chamber.

4,448,052

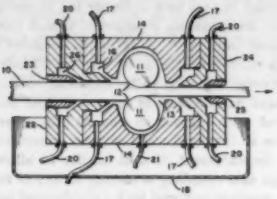
HYDROSTATIC ASSIST DURING ROLLING OF CAST METAL

Deepak K. Verma, Rochester, Minn., assignor to Southwire Company, Carrollton, Ga.

Filed Feb. 4, 1982, Ser. No. 345,843
Int. Cl.³ B21D 39/08
U.S. Cl. 72—57 7 Claims

1. A method of continuously rolling a cast metal bar while preventing serious cracking of the bar surface due to tension exerted upon the unrolled surface by the adjacent rolled surface, comprising applying a fluid under pressure to the bar and creating a hydrostatic compressive stress on the unrolled bar surface immediately prior to rolling; said stress sufficient to reduce rolling tension to below the level needed to crack the bar; and

said step of applying a hydrostatic compressive stress to the bar surface includes the steps of flowing a liquid under a first high pressure to and around the bar immediately prior to rolling while flowing a liquid under a second, lower,



pressure to and around the bar immediately prior to contacting said bar with said first high pressure so that the flow of the second lower pressure liquid assists in sealing the first high pressure liquid around the bar.

4,448,053

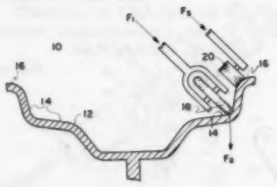
METHOD OF STRESS ROLLING A METALLIC RIM

Roy C. Holmstrom, Lake Orion, Mich., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed May 18, 1982, Ser. No. 379,398

Int. Cl.³ B21D *53/26*; B21H *1/02*

U.S. Cl. 72—102 **2 Claims**



1. An improved method of stress rolling a metallic rim of the type which includes the step of mounting said rim for rotation, directing a stress roller into contact with a surface of a portion of said rim to be stress rolled, and applying a predetermined force to said stress roller during said rotation of said rim to cause it to produce a predetermined compressive stress in said portion of said rim near said surface thereof as said stress roller entirely traverses said surface, said rim including a peripheral flange adjacent said portion, said improvement comprising: applying an outside force to said peripheral flange to produce elastic bending of said rim at said portion thereof in a direction which will create a tensile force in said portion of said rim adjacent said surface thereof during said step of applying said predetermined force to said stress roller to produce a desired compressive stress in said portion of said rim near said surface thereof which exceeds said predetermined compressive stress; and said step of applying said outside force being accomplished by directing a second roller means in axial alignment with said stress roller into contact with said peripheral flange.

4,448,054

COIL WINDING APPARATUS

Albert Wayne, Muncie, Ind., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 250,815, Apr. 3, 1981, abandoned. This application May 24, 1983, Ser. No. 496,873

Int. Cl.³ B21C *47/00*; B21F *3/08*

U.S. Cl. 72—146 **5 Claims**

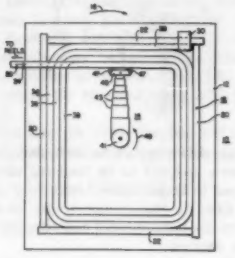
1. A coil winding apparatus for winding adjacent pancake type coils, said apparatus comprising:

(a) a winding table for supporting a coil during winding;

(b) restraining barrier means on the table surface for defining the outer dimensions of a coil;

(c) reel means adjacent to the table for storing and paying off a continuous strand of insulated metal onto the table and within the confines of the restraining barrier means;

(d) forming means for pressing the continuous strand against the restraining barrier means during placement of the outer coil turn and against each successive inner coil turn as the strand is placed spirally on the table;



(e) at least one of the forming means and the table being rotatable in such direction as to facilitate the placement of the strand in a spiral pattern, whereby a compact coil is formed;

(f) the forming means comprising a retractable member having leading surface means for forcing the strand radially outwardly; and

(g) the retractable member being pivotally mounted on the table, and includes drive means for rotating the member in the direction of placement of the strand on the table.

4,448,055

METHOD TO MANUFACTURE POLE PIECES FOR DYNAMO ELECTRIC MACHINE, AND SO-MADE POLE PIECE

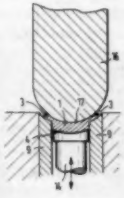
Hans Würth, Ludwigsburg, and Jürgen Leinhos, Göttingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 165,556, Jul. 3, 1980, abandoned. This application Aug. 16, 1982, Ser. No. 408,192

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1979, 2935182

Int. Cl.³ B21D *22/00*

U.S. Cl. 72—354 **5 Claims**



1. Method of economical and waste-free manufacture of pole pieces (6) having a central pole core (4) and projecting pole shoes (3) integral with the central pole core and of less thickness than the core, for use in dynamo electric machines having an air gap, comprising

providing a flat strip of material of a predetermined thickness corresponding to the thickness of the pole core (4);

severing essentially rectangular blanks (1) from the strip;

providing a cold-forming press (9, 14, 16) having

a die formed with a recess which has inclined edges (10) of the shape of the pole shoes (3);

and a central well, the junction of the inclined edges (10) and of the surfaces of the well-forming shearing edges (11);

a lower punch element (14) movable in the well and shaped to match the surface configuration of the pole core of the pole piece (6), and

an upper punch element (16) formed with an outwardly bulging surface (17) matching the surface configuration of the side of the pole piece (6) facing the air gap;

and including the steps of

positioning the essentially rectangular blank (1) on the inclined edges (10) of the die;

moving said upper and lower punch elements towards each other and engaging said punch elements with the blanks to shape, in one operation, the central pole core (4) and form the projecting pole shoes (3) without cutting waste, the step of forming the pole shoes (3) comprising

engagement of the blank with the inclined edge (10) of the die, and, upon contact of the blank with the shearing edges (11), and pressure of said upper punch element (16), the shearing edges shearing two side edge portions of the blank and flow forming the poles shoes (3) only by cutting into the blank to form the pole shoes as cut flaps of reduced thickness with respect to the thickness of the blank;

and the step of

shaping the surface configuration of the pole core comprising

moving the lower punch element (14) in the well to shape the surface configuration of the pole core (4) while maintaining said predetermined thickness of the pole core.

4,448,056

INFEED MECHANISM FOR A PRESS

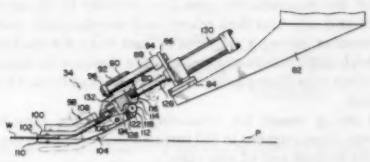
Kiyokazu Baba, Komatsu, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Sep. 28, 1982, Ser. No. 425,974

Claims priority, application Japan, Oct. 12, 1981, 56-150015[U]; Oct. 12, 1981, 56-150021[U]

Int. Cl.³ B21D *43/10*

U.S. Cl. 72—422 **7 Claims**



1. In a press wherein an upper die or press slide is moved up and down relative to a lower die by drive means, an infeed mechanism for successively feeding sheetlike workpieces into the press in timed relation to the up-and-down motion of the upper die or press slide, comprising:

(a) an infeed cam mechanism driven from the same drive means as the upper die or press slide;

(b) a carriage linked to the infeed cam mechanism thereby to be reciprocated horizontally between a retracted position away from the dies and a loading position close to the dies;

(c) a pair of gripping jaw assemblies carried by the carriage for gripping each of the successive sheetlike workpieces in the retracted position of the carriage and for releasing the workpiece in the loading position thereof, each gripping jaw assembly comprising:

(1) guide means on the carriage extending at an angle to the plane of the horizon;

(2) an upper jaw having a gripping end and a base end and movable back and forth along the guide means;

(3) a lower jaw also having a gripping end and a base end and medially pivoted to the upper jaw, the gripping ends of the upper and lower jaws being adapted to engage the successive workpieces therebetween;

(4) a grip cam mechanism acting between the base ends of the upper and lower jaws; and

(5) a linear actuator mounted to the carriage and coupled to the grip cam mechanism for moving therethrough the upper and lower jaws back and forth along the guide means, the grip cam mechanism being adapted to cause the pivotal motion of the gripping end of the lower jaw toward the gripping end of the upper jaw upon both full extension and full contraction of the linear actuator; and

(d) a lock mechanism for preventing the infeed cam mechanism from reciprocating the carriage and retaining the latter in the retracted position during die replacement.

4,448,057

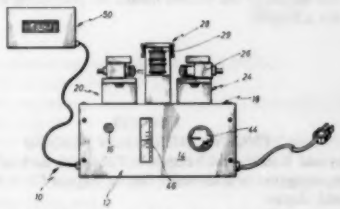
APPARATUS AND METHOD FOR TESTING A GEOPHONE DURING ASSEMBLY

Gary J. Craig, Houston, Tex., assignor to Geosource Inc., Houston, Tex.

Filed May 21, 1982, Ser. No. 380,840

Int. Cl.³ G01V *13/00*; G01M *19/00*

U.S. Cl. 73—1 DV **25 Claims**



1. Apparatus for testing a geophone during assembly comprising:

a power source;

a light source electrically connected to said power source;

means, electrically connected to said power source, for generating a voltage signal in response to light received from said light source;

a member for supporting said geophone, said geophone including a coil suspended by springs about a cylindrical magnet and pole pieces secured at each end of the magnet, said member located in a defined path between said light source and said means for generating a voltage signal; and

means for indicating said voltage signal, electrically connected to and operatively associated with said power source and said means for generating a voltage signal, said voltage signal representative of the resilient characteristics of said geophone springs.

4,448,058

RESPIRATORY GAS ANALYSIS INSTRUMENT HAVING IMPROVED VOLUME CALIBRATION METHOD AND APPARATUS

Michael B. Jaffe; Charles R. Luper, both of Anaheim; Eric Mabry, Westminster, and Howard J. Reid, Brea, all of Calif., assignors to Sensormedics Corporation, Anaheim, Calif.

Filed Jul. 2, 1982, Ser. No. 394,608

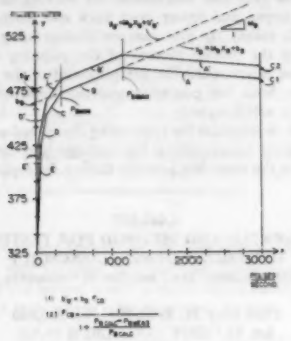
Int. Cl.³ G01N *31/00*

U.S. Cl. 73—23 **50 Claims**

1. In a gas analysis instrument ofthe type having at least one gas analyzer for measuring the concentration of a component of interest in human breath, and a gas turbine for producing a number of output pulses that varies in accordance with the volume and rate of flow of human breath therethrough, the improvement comprising:

(a) first means for storing a piecewise linear approximation of the response of the gas turbine,

(b) second means responsive to the number of output pulses produced by the turbine for determining the operating point of the turbine on the stored approximation, and



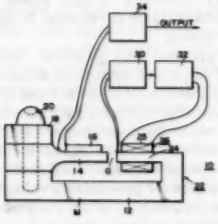
(c) third means responsive to the stored approximation and the output of the second means for providing volume data for a breath.

4,448,059

ENGINE VIBRATION SENSOR

Haruyoshi Kondo, and Masaharu Takeuchi, both of Aichi, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi, Japan

Filed Apr. 2, 1982, Ser. No. 364,679
Claims priority, application Japan, Apr. 6, 1981, 56-51326
Int. Cl.³ G01L *23/22*
U.S. Cl. 73—35 **9 Claims**



1. An engine vibration sensor comprising:

a vibrator formed of a magnetic material whose Young's modulus varies in response to a strength of a magnetic field applied to said material, said vibrator having a resonant frequency to resonate at a specific frequency of vibration of an engine and the vibration of said vibrator being converted into an electric signal representing the engine vibration, said resonant frequency being variable in response to a change in magnetic field applied to said vibrator,

a magnetic field generator for applying a magnetic field to said vibrator to vary the resonant frequency of said vibrator, and

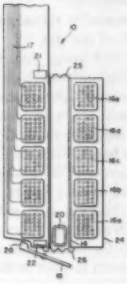
a means for controlling the intensity of the magnetic field applied to said vibrator by said magnetic field generator, whereby the resonant frequency of the vibrator is adjusted to the specific frequency of vibration of the engine by varying the intensity of the magnetic field.

4,448,060

VISCOSITY MEASUREMENT USING PRESSURIZED VISCOMETER DEVICE

Peter Maruhnic, Pennington, N.J., assignor to HRI, Inc., Gibbsboro, N.J.

Filed Mar. 1, 1982, Ser. No. 353,456
Int. Cl.³ G01N *11/12*
U.S. Cl. 73—57 **5 Claims**



1. A fluid viscosity measuring device which is installed in the upper portion of a pressurized reactor containing an ebullated catalyst bed and has its lower end located above the catalyst bed, said device comprising:

(a) a vertically oriented non-magnetic tube containing a movable core-float member which is cylindrical shaped and contains sufficient iron to be magnetizable and has a diameter slightly smaller than the tube inner diameter;

(b) multiple electromagnetic coils surrounding said tube, and enclosed within electrical insulating material which comprises a resin compound, said tube being surrounded by at least three adjacent electromagnetic coils each centrally located around the tube;

(c) switching means for energizing and deenergizing said electromagnetic coils in a sequence so as to magnetically lift the magnetizable core-float member to the upper end of said tube and then release said member, said core-float member having a length of at least about 0.8 the height of each electromagnetic coil and the distance for movement of the core-float member is between about 6 and 24 inches; and

(d) timing means for measuring the elapsed time for the core-float member to fall through said tube from the top to the bottom end of said tube.

4,448,061

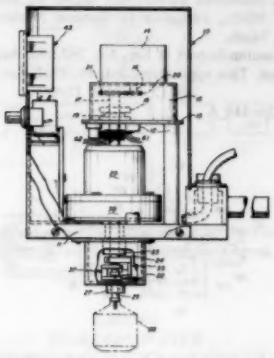
VISCOMETER WITH A CONTINUOUSLY VARIABLE ELECTRONIC READOUT

David A. Brookfield, 168 Massapoag Ave., Sharon, Mass. 02067

Filed Jun. 7, 1982, Ser. No. 385,576
Int. Cl.³ G01N *11/14*
U.S. Cl. 73—59 **4 Claims**

1. A viscometer for use in continuously monitoring the viscosity of a liquid, said viscometer including a rotatable drive unit, means to rotate said unit, a rotatable driven unit coaxial with said first mentioned drive unit and provided with an element to be immersed in the liquid the viscosity of which is to be monitored, and to be subjected to drag which increases as the viscosity of the liquid increases, resiliently yieldable means connecting said unit enabling the drive unit to rotate the drive unit but with the connecting means yielding as the drag increases, and an electric circuit including an electronic readout having a plurality of leads and a transducer having a stator included in said drive unit and a rotor included in said driven unit, said stator having a plurality of leads each including a slip ring, one for each of said readout leads and said readout leads including brushes, one for each slip ring and in contact there-

with, said transducer providing a variable signal continuously to said readout to which said readout responds and which



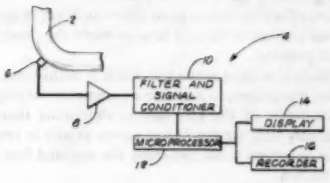
varies in strength immediately with any variations in the viscosity of the liquid.

4,448,062

METHOD AND APPARATUS FOR EROSION DETECTION AND LOCATION IN HYDROCARBON PRODUCTION SYSTEMS AND THE LIKE

Marvin L. Peterson, and Norman W. Hein, Jr., both of Ponca City, Okla., assignors to Conoco Inc., Ponca City, Okla.

Filed Oct. 22, 1981, Ser. No. 313,902
Int. Cl.³ G01N *29/00*
U.S. Cl. 73—86 **8 Claims**



1. A method for detecting the loss of conduit material from a conduit through which flows a fluid comprising:

sensing the energy released when the conduit material is separated from the conduit as the fluid flows therethrough;

determining the amount of material separated from the conduit based directly on the sensed released energy;

wherein a particulate substance is entrained in the fluid and wherein the step of sensing the energy released includes:

attaching to the conduit a transducer means responsive to a first range of frequencies of the released energy;

converting, by means of said transducer means, the sensed released energy within the first range of frequencies into corresponding electrical signals;

wherein the first range of frequencies of the released energy to which the transducer means is responsive includes the frequencies between approximately 100 kilohertz and approximately 500 kilohertz;

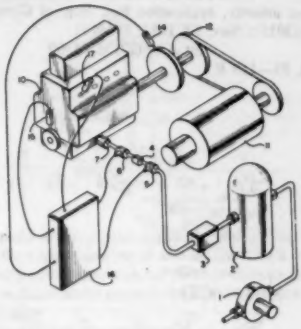
wherein the step of sensing the energy released further includes electrically filtering the corresponding electrical signals so that only those ones of the corresponding electrical signals having frequencies within a second range of frequencies are provided for performing said step of computing the quantity of material separated from the conduit.

4,448,063

ENGINE COLD TESTING

Ronald K. Mudge, Brighton, and Edwin E. Rice, Farmington Hills, both of Mich., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Feb. 3, 1983, Ser. No. 463,400
Int. Cl.³ G01M *15/00*
U.S. Cl. 73—117.2 **16 Claims**



1. An apparatus for engine testing comprising:

means for rotating the engine;

means for supplying a fluid to the pressure oil supply gallery of said engine;

means for measuring the instantaneous flow of said fluid on a continuing basis as said engine is rotated;

means for determining the position of said engine in its rotating cycle; and

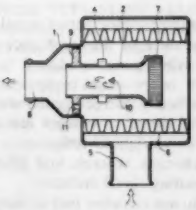
means for determining the amount of said fluid flow relative to the position of said engine in its rotating cycle.

4,448,064

DEVICE FOR DETECTING THE INTAKE AIR FLOW RATE IN AN INTERNAL COMBUSTION ENGINE

Yoshiaki Asayama, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 24, 1982, Ser. No. 381,660
Claims priority, application Japan, Nov. 28, 1980, 55-169250
Int. Cl.³ G01F *1/32*
U.S. Cl. 73—118.2 **6 Claims**



1. A device for detecting an intake air flow rate in an internal combustion engine, comprising:

a casing into which intake air is introduced;

a detector for detecting the air flow rate;

an air conduit housing said detector; and

a partition blocking off a section of said casing and being penetrated on its upstream side by said conduit for bounding upstream and downstream regions of the intake air, said partition being positioned downstream of the air flow detecting portion of said detector.

4,448,065

METHOD AND APPARATUS FOR PNEUMATICALLY MEASURING THE VOLUME OF COMBUSTION CHAMBER SPACES IN CYLINDER HEADS AND THE LIKE

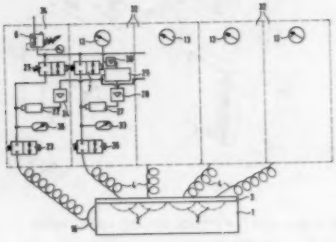
Karl-Heinz Meurer, Leinfelden-Echterdingen, Fed. Rep. of Germany, assignor to J. W. Froehlich Machinenfabrik GmbH, Leinfelden-Echterdingen, Fed. Rep. of Germany

Filed Jul. 6, 1982, Ser. No. 395,682

Claims priority, application Fed. Rep. of Germany, Jul. 30, 1981, 3130151; Nov. 12, 1981, 3144941

Int. Cl.³ G01M *15/00*

U.S. Cl. 73—119 R 15 Claims



1. Process for measuring the volume of one or more spaces in a workpiece, comprising

supplying fluid under a predetermined pressure to a first pressure circuit,

communicating the fluid in said first pressure circuit to a workpiece space to be measured,

comparing the actual pressure in said workpiece space and first circuit with a predetermined nominal pressure corresponding to a known nominal combustion chamber volume,

generating a workpiece space volume indicating signal dependent on the difference in said actual and nominal pressures,

generating a temperature compensating signal dependent on the actual temperature of the workpiece at which the workpiece space is being measured, and

communicating the temperature compensating signal to means for automatically correcting the workpiece space volume indicating signal to correct erroneous volume indications due to workpiece temperature variation induced pressure changes, wherein said generating a temperature compensating signal includes:

placing a detachable test chamber part in temperature communicating relationship to the workpiece, said test chamber part defining a test chamber space of predetermined volume,

supplying fluid under predetermined pressure to a second pressure circuit,

communicating the fluid in said second pressure circuit to said test chamber space,

monitoring the actual pressure in said test chamber space and said second circuit, and

utilizing the monitored actual pressure to generate a corresponding signal which serves as said temperature compensating signal.

4,448,066

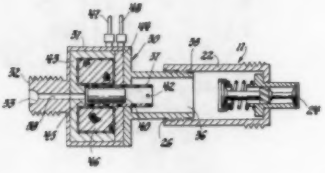
FUEL PER PULSE INDICATOR FOR A PULSE ENGINE FUEL INJECTION SYSTEM

Edward F. Romblom, Dewitt, and Arthur R. Sundeen, Lansing, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 293,002, Aug. 14, 1981, abandoned. This application Jul. 19, 1982, Ser. No. 399,439

Int. Cl.³ G01M *15/00*

U.S. Cl. 73—119 A 8 Claims



1. Fuel per pulse sensing apparatus for a fuel line with a fuel injector in an internal combustion engine pulse fuel injection system comprising, in combination:

a body inserted in the fuel line, the body defining a cylindrical bore with an inlet and outlet at opposite axial ends thereof;

a magnetic piston axially movable in the bore to and from a stopped position, the piston having an outer diameter of such size in relation to the inner diameter of the cylindrical bore that fluid flow past the piston exerts an axial force thereon;

means comprising, with the piston, a magnetic circuit including an actuating coil having an inductance varying with axial piston position over the range of piston movement resulting from a fuel injection pulse;

reset means effective, before each injection event to apply an electrical current to the coil so as to move the piston to its stopped position;

means effective, at least when the piston is within said range of piston movement, to measure a parameter varying with the inductance of the coil and to determine therefrom substantially how far the piston moves axially in response to a fuel injection pulse, whereby the injected fuel quantity is known.

4,448,067

METHOD AND APPARATUS FOR DETERMINING THE INJECTED FUEL QUANTITY IN INTERNAL COMBUSTION ENGINES

Hans-Christian Engelbrecht, Stuttgart; Helmut Kniss, Waiblingen, and Wolf Wessel, Oberriexingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 22, 1982, Ser. No. 421,665

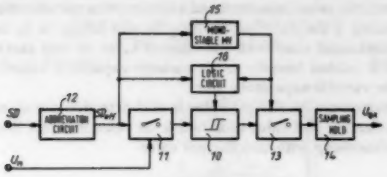
Claims priority, application Fed. Rep. of Germany, Jul. 2, 1982, 3224742

Int. Cl.³ G01M *15/00*

U.S. Cl. 73—119 A 16 Claims

8. An apparatus for determining the injected fuel quantity (Q_K) in internal combustion engines, and providing for the injection duration correction upon the evaluation of a performance graph indicating the injection quantity over the injection duration dependent upon the rpm (n) as a parameter for the engine type, comprising, means supplying an injection duration signal (SD) derived from the operation of the engine,

an integrator means for the integration of rpm-dependent voltages (Un), and circuit means (12) for correcting the injection duration signal, whereby the integration duration is determined from the corrected injection duration signal.

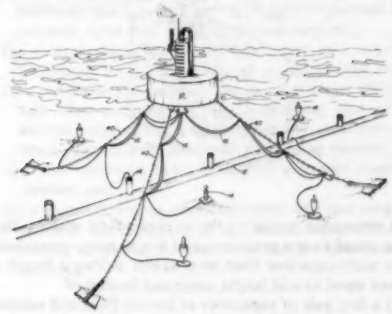


4,448,068

SHALLOW WATER ENVIRONMENTAL/OCEANOGRAPHIC MEASUREMENT SYSTEM

Alexander L. Sutherland, and Richard C. Swenson, both of Carriere, Miss., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 31, 1981, Ser. No. 298,053
Int. Cl.³ B63B *35/00*
U.S. Cl. 73—170 A **3 Claims**



1. A shallow water environmental/oceanographic measurement system comprising:

a moored cylindrical buoy having a central hawse pipe, said cylindrical buoy being anchored at multiple points over a particular location and containing an electronics package;

a first pipe mounted on said cylindrical buoy, said first pipe enclosing the upper end of said hawse pipe;

a second pipe having a gooseneck at the top, said second pipe being mounted on said cylindrical buoy such that the bottom of said second pipe extends into the interior of said cylindrical buoy and said gooseneck extends over the upper end of said first pipe;

a plurality of sensors mounted on the sea floor within the moor area of said cylindrical buoy, said sensors being connected to said electronics package in said cylindrical buoy by electrical cables over which sensor data is transmitted; and

means connected to said electronics package for transmitting said sensor data to a remote site, said transmitting means being mounted on said cylindrical buoy;

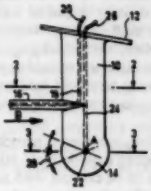
whereby said electrical cables from said sensors are routed through said hawse pipe, said first pipe and said second pipe to said electronics package in the interior of said cylindrical buoy.

4,448,069

AIRSPEED SENSING POST FOR DETERMINING RELATIVE VELOCITY OF A FLUID AND A CARRIER

Francis J. P. Gibert, Les Mesnuls, France, assignor to FGP Instrumentation, Les-Clayes-sous-Bois, France

Filed Jan. 7, 1982, Ser. No. 337,710
Claims priority, application France, Jan. 8, 1981, 81 00186
Int. Cl.³ G01C *21/10*
U.S. Cl. 73—182 **8 Claims**



1. An airspeed sensing post for determining the relative velocity of a fluid and a carrier, in a direction which can vary in a substantially planar circle sector defined on both sides of a mean direction, from static pressure and total pressure values, said post including

a body to be fixed to the carrier,

a static pressure sensing device fixed to said body and forming a first pressure signal, and

a total pressure sensing device, fixed to said body, having an orifice opening in a direction substantially parallel to said mean direction and for forming a second pressure signal,

said static pressure sensing device including at least one orifice made in a surface in which it opens in a direction substantially normal to said mean direction,

said surface in which at least one orifice opening includes at least a part of a revolutionary surface having a revolution axis normal to the plane of said circle sector,

said revolution axis intercepting or being disposed very near to said orifice,

said revolutionary surface part having an angular extension at least equal to the angular extension of said circle sector, and

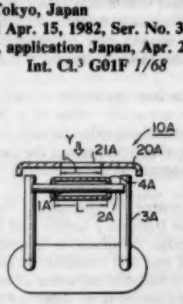
said revolutionary surface part being disposed at least above the orifice in the flowing direction of the fluid, so that the fluid flow arriving near said orifice is always the same and the fluid flows along a surface having the same contour when the fluid flow direction varies in the circle sector.

4,448,070

HOT-WIRE TYPE FLOW VELOCITY METER

Yoshishige Ohyama; Yutaka Nishimura; Teruo Yamauchi, all of Katsuta; Hiroshi Kuroiwa; Minoru Ohsuga, both of Hitachi, and Tadashi Kirisawa, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 15, 1982, Ser. No. 368,641
Claims priority, application Japan, Apr. 20, 1981, 56-58473
Int. Cl.³ G01F *1/68*
U.S. Cl. 73—204 **9 Claims**



1. In a hot-wire type flow velocity meter having an electric

resistor for producing heat and a supporting member supporting said electric resistor, said electric resistor and said supporting member being placed in a flowing fluid and the flow velocity of said fluid being measured by sensing the change in the rate of heat transfer from said electric resistor to said fluid,

an improvement which comprises shielding means for shielding said supporting member so as to prevent any change of rate of heat transfer from said supporting member to said fluid around said supporting member, and a support to the surface of which said electric resistor is attached and a coating member on the surface of said electric resistor, said support being supported by said supporting member, said shielding means comprising a shielding member attached to said supporting member and being disposed so as to shield said supporting member in such a manner as to expose only said electric resistor to the flow of fluid,

wherein said shielding member is provided with a vent hole and further including a guide plate attached to said shielding member so as to be coaxial with said supporting member on one side of said resistor and within said shielding member.

4,448,071

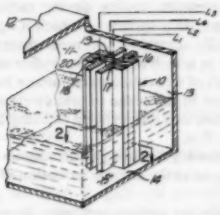
METHOD OF MEASURING AND INDICATING FLUID LEVELS

Emanuel Tward, Northridge, Calif., assignor to Tward 2001 Limited, Los Angeles, Calif.

Filed Feb. 3, 1982, Ser. No. 345,350

Int. Cl.³ G01F *23/26*

U.S. Cl. 73—304 C **3 Claims**



1. A method for measuring the level of a fluid within a fluid storage vessel over a predetermined height range comprising:

(a) sensing the fluid level within said vessel with a multi-capacitor fluid level sensor having a length at least equal to said height range and formed of a first pair of capacitors of said length and of fixed and substantially like capacitive values located within said vessel and of a second pair of capacitors of said length and having like open dielectric spaces located within said vessel for receiving varying levels of the fluid within said vessel, said fluid within said spaces functioning as a variable dielectric material therein whereby said second pair of capacitors have variable capacitive values related linearly to the fluid level within said spaces;

(b) connecting the four capacitors of said sensor together to form the four capacitive sides of a Wheatstone bridge circuit, the pair of fixed value capacitors connected as two opposing sides of said bridge and the pair of variable value capacitors connected as the remaining two opposing sides of said bridge;

(c) applying a source of alternating current of constant voltage and set frequency across said bridge circuit to a first set of bridge terminals at opposite corners of the bridge, each of said first terminals located between a fixed capacitor and a variable capacitor of said sensor;

(d) connecting a current flow detection circuit across said bridge to a second set of bridge terminals independent of said first set of terminals and at opposite corners of the bridge, each of said second terminals located between a fixed capacitor and a variable capacitor of said sensor, said bridge circuit being in an unbalanced capacitive state so long as any fluid remains in the dielectric spaces of the variable value capacitors and said detection circuit experiencing a current flow so long as said bridge is in said unbalanced state with the current value of said current flow related linearly to the variable capacitive values of the variable capacitors; and

(e) measuring the current value in said detection circuit and indicating said value as a fluid level value in direct linear relationship with said current value.

4,448,072

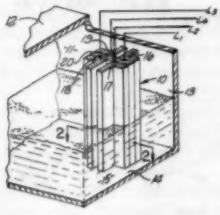
FLUID LEVEL MEASURING SYSTEM

Emanuel Tward, Northridge, Calif., assignor to Tward 2001 Limited, Los Angeles, Calif.

Filed Feb. 3, 1982, Ser. No. 345,352

Int. Cl.³ G01F *23/26*

U.S. Cl. 73—304 C **4 Claims**



1. A system for measuring the level of a fluid within a fluid storage vessel over a predetermined height range comprising:

(a) a multi-capacitor fluid level sensor having a length at least equal to said height range and formed of

(i) a first pair of capacitors of known fixed and substantially like capacitive value located within said fluid vessel and

(ii) a second pair of capacitors located within said fluid vessel having like open dielectric spaces for receiving varying levels of the fluid contained within said vessel, said fluid within said spaced functioning as a variable dielectric material therein whereby said second pair of capacitors have variable capacitive values;

(b) means connecting the four capacitors of said sensor together to form the four capacitive sides of a Wheatstone bridge circuit, the pair of fixed value capacitors connected as two opposing sides of said bridge and the pair of variable value capacitors connected as the remaining two opposing sides of said bridge;

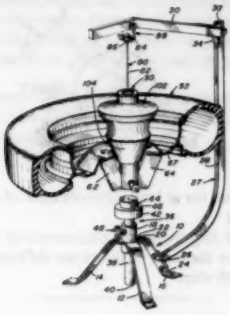
(c) a source of alternating current of constant voltage and set frequency applied across said bridge circuit to a first set of bridge terminals at opposite corners of the bridge, each of said first terminals located between a fixed capacitor and a variable capacitor of said sensor; and

(d) a detection circuit connected across the bridge to a second set of terminals independent of said first set of terminals and at oposite corners of the bridge, each of said second terminals located between a fixed capacitor and a variable capacitor of said sensor, said detection circuit including current value measurement and current value indication circuitry.

4,448,073
WHEEL BALANCING DEVICE

Louison Patry, 393 8th Street West, Thetford Mines, Quebec, Canada

Filed Jun. 28, 1982, Ser. No. 392,461
Int. Cl.³ G01M 1/02
U.S. Cl. 73—484 8 Claims

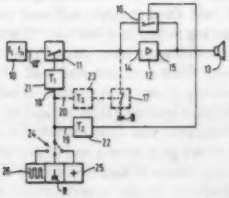


1. A device designed to balance wheels comprising:
(a) a tripod;
(b) a vertically sliding element mounted upon said tripod;
(c) a supporting element serving to support a wheel to be balanced, said supporting element itself supported, in one instance, upon said vertically-sliding element;
(d) a suspension element mounted upon said tripod and including a lever extending over said supporting element;
(e) a connecting element uniting the supporting element to said lever and allowing said supporting element, in a second instance, to be supported in free suspension upon being released from said vertically-sliding element;
(f) a first reference mark associated with said connecting element; and
(g) a second reference mark associated with said supporting element, the balancing of the wheel being effected by adding weights to the wheel until the two reference marks coincide.

4,448,074
SOFT-SWITCHING AUDIOMETER

Wolfgang Schmidt, Berlin, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 3, 1982, Ser. No. 345,224
Claims priority, application Fed. Rep. of Germany, Mar. 6, 1981, 3108407
Int. Cl.³ A61B 5/12
U.S. Cl. 73—585 14 Claims

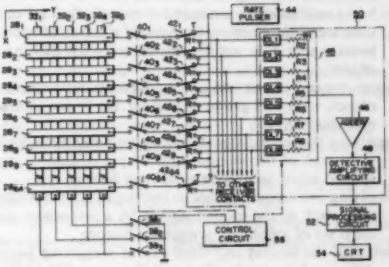


1. Soft-switching audiometer having
a source (10) of audio signals;
an amplifier (12) connected to the source, and an audio transducer (13) providing amplified audio output;
a first switch (11) serially connected between the source (10) and the amplifier;
and a switch control unit (24; 25, 26, R) to control switch operation,
and wherein, in accordance with the invention,
a second switch (16) is connected in a circuit path across the input-output terminals (14, 15) of the amplifier;
said first switch (11) and said second switch (16) are electronic controlled switches, both being connected to and controlled to open and close by the switch control unit;
and both said first and second switches have a current passing/current blocking vs. time characteristic which results in a current rise, or decay, respectively, which is close to but different from abrupt change in current level yet providing rapid level and, below the rate of level change resulting in perceived switching clicks upon connection and disconnection of a circuit path from said audio source (10) through the amplifier (12) to the transducer (13).

4,448,075
ULTRASONIC SCANNING APPARATUS

Yasuhiko Takemura, and Fumihiko Akutsu, both of Tochigi, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed May 6, 1981, Ser. No. 260,992
Claims priority, application Japan, May 9, 1980, 55-61592
Int. Cl.³ G01N 29/00
U.S. Cl. 73—626 8 Claims

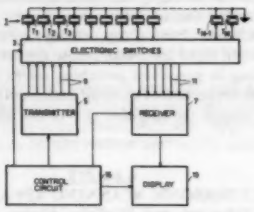


1. An ultrasonic beam apparatus comprising:
a transducer plate;
a plurality of elongated, parallel driving line electrodes arranged on one surface of said transducer plate and spaced side-by-side in a first direction;
a plurality of elongated, parallel grounding line electrodes arranged on the opposite surface of said transducer plate and spaced side-by-side in a second direction not parallel to said first direction;
said driving line electrodes and said grounding line electrodes being positioned to form a matrix of individual transducer elements capable of both emitting and receiving ultrasonic beams;
a transmission control means interconnected with said driving line electrodes and said grounding line electrodes for selectively supplying electronic pulses to selected electrodes to produce ultrasonic beams; and
reception control means interconnected with said driving line electrodes and said grounding line electrodes for switching selected electrodes to a reception mode to sequentially produce generally circular arrays of receptive transducer elements respectively having a common center but different diameters to thereby vary along both the first and second directions the effective reception area of the apparatus.

4,448,076
METHOD AND DEVICE FOR EXAMINATION BY MEANS OF ULTRASONIC BEAMS

Teunis R. van Heelsbergen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 197,366, Oct. 15, 1980, abandoned.
This application Sep. 22, 1982, Ser. No. 421,557
Claims priority, application Netherlands, Oct. 15, 1979, 7907595
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—626 9 Claims



1. A method of examining an object with ultrasound energy utilizing a row of N electroacoustic transducers, comprising the steps of:

selecting a group of M adjacent transducers in the row, M being less than or equal to N;

applying first electrical signals to at least part of the group of transducers, the signal applied to each of the transducers being multiplied by a respective one of a first set of amplitude weighting factors, to transmit ultrasound energy as a beam which does not diverge between the group and the object;

receiving said ultrasound energy, which is reflected from the object, with said group of transducers to produce second electrical signals;

applying the second signals to receive networks which multiply each of the second signals by a respective one of a second set of amplitude weighting factors; and

applying the second signals to receive networks which multiply each of the second signals by a respective one of a third set of amplitude weighting factors;

wherein the second and third sets of weighting factors are different from each other and the sum of the weighting factors in the second set is equal to the sum of the weighting factors in the third set.

4,448,077
VIBRATION DIAGNOSIS METHOD FOR ROTARY MACHINE

Kazuo Sato, Kitaibaraki; Motoji Ohmori, Hitachi; Masakazu Takasumi, Ibaraki; Motohiro Shiga, Hitachi; Koki Shiohata, Ibaraki, and Fumio Fujisawa, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 26, 1982, Ser. No. 371,561
Claims priority, application Japan, Apr. 30, 1981, 56-64162
Int. Cl.³ G01M *1/22*
U.S. Cl. 73—660 11 Claims

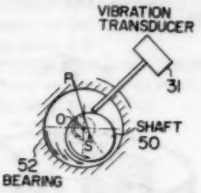
1. A vibration diagnosis method for a rotary machine which detects a shaft vibration of the rotary machine to diagnose the presence or absence of a self-excited vibration on the basis of a detected shaft vibration signal comprising:

a first step of detecting a rotating speed n of the rotary machine;

a second step of determining if the rotating speed n detected in the first step is not lower than two times of a rotating speed n_1 corresponding to a first order natural frequency of the rotary machine;

a third step of determining phases at predetermined characteristic points on a vibration waveform of the detected shaft vibration signal in a plurality of cycles of the detected shaft vibration signal when it is determined that the detected rotating speed n is not lower than the rotating speed n_1;

a fourth step of determining a difference between the determined phases for at least adjacent ones of the plurality of cycles; and

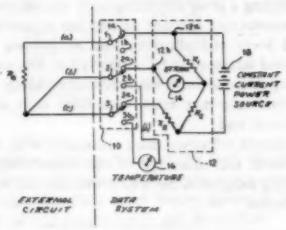


a fifth step of diagnosing the occurrence of the self-excited vibration on the basis of the phase difference determined in the fourth step.

4,448,078
THREE-WIRE STATIC STRAIN GAGE APPARATUS

William F. Bridges, Palm City, Fla., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 23, 1982, Ser. No. 444,006
Int. Cl.³ G01B *7/18*
U.S. Cl. 73—766 5 Claims



1. A three-wire static strain gage apparatus comprising in combination:

means for forming a Wheatstone bridge comprising a first, second and third resistors in series, and means for measuring strain connected to the common junction of said first and second resistors,

means for switching arranged to provide respectively a complete circuit between one end of said first resistor and the other end of said strain measuring means and between one end of said third resistor and said other end of said strain measuring means in a first switch mode, said switching means providing an open circuit respectively between said first and third resistors and said other end of said strain measuring means in a second switch mode,

a strain gage means having a first, second and third leadwire connected thereto, said first leadwire connected to one end of said strain gage means and to said switching means, said switching means in said first switch mode connecting said first leadwire to the non-common end of said first resistor, said second and third leadwires being connected to the other end of said strain gage means, the other end of said second leadwire being connected to said switching means which in said first switch mode connects it with said other end of said strain measuring means, the other end of said third leadwire being connected to said switch-

ing means which in said first switch mode connects it to said one end of said third resistor, and

means for measuring temperature connected to said switching means which in said second switch mode connects said temperature measuring means to the non-common ends of said second and third leadwires, said strain measuring means measuring the strain in said strain gage means in said first switch mode, said temperature measuring means measuring the temperature of said second and third leadwires in said second switch mode to provide a temperature compensation reading for said gage measurement, and,

a power source means connected between the common junction of said second and third resistors and said one end of said first resistor.

4,448,079

PROCESS FOR DETERMINING THE FORCE ACTING ON A TEST PIECE AND THE RESULTANT CHANGE IN PARAMETERS AND A DEVICE FOR CARRYING OUT SUCH A PROCESS

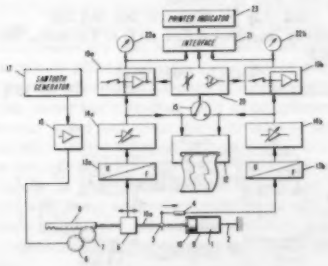
Gerd Schumacher, Pinneberg-Waldenau, and Heinz-Werner Masurat, Pinneberg, both of Fed. Rep. of Germany, assignors to B.A.T. Cigaretten-Fabriken GmbH, Hamburg, Fed. Rep. of Germany

Filed Mar. 19, 1982, Ser. No. 359,912

Claims priority, application Fed. Rep. of Germany, Mar. 23, 1981, 3111319

Int. Cl.³ G01D *1/16*

U.S. Cl. 73—789 **15 Claims**



1. A process for determining the force acting on a test piece and the parameters of the test piece reacting under the force, comprising the steps of:

(a) exposing the test piece to the effect of the force increasing in a linear manner;

(b) measuring continuously the resultant changes in parameters and the force needed for this purpose, and comparing the ascertained values with predetermined values; and

(c) determining the measured value pair when there is equality between at least one measured value and the associated reference value.

4,448,080

PROCESS AND APPARATUS FOR MONITORING THE FORMATION AND PROPAGATION OF CRACKS IN MACHINE PARTS AND COMPONENTS

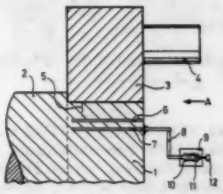
Manfred Dressel, Lambsheim; Johannes Greven, Lampertheim; Arnulf Jeck, Neustadt; Rudolf Magin, Schifferstadt; Günther Nick, Neuhofen; Paul Schaffarczyk, Speyer, and Guenther Weiss, Wachenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Dec. 11, 1981, Ser. No. 330,026

Claims priority, application Fed. Rep. of Germany, Dec. 31, 1980, 3049628

Int. Cl.³ G01N *19/08*

U.S. Cl. 73—799 **6 Claims**



1. A method for continuously monitoring the formation and propagation of cracks in movable machine parts and components during the operation thereof, especially in the rotating shafts or prime movers and mechanical equipment, said method comprising

providing in the uncracked section of the component at least one zone which is permeable to a medium and which intersects the plane of the crack,

filling said zone with a medium and adjusting said medium to a defined pressure which deviates from the ambient pressure,

closing off said zone with respect to the environment,

providing outside of said component a pressure responsive means,

connecting said pressure responsive means by a line to said zone for communication therewith, and

deriving from the displacement of said pressure responsive means an indication of a change in pressure caused by the crack.

4,448,081

METHOD AND DEVICE FOR THE DYNAMIC AND DENSITY-INDEPENDENT DETERMINATION OF MASS FLOW

Jörg Kolitsch, Munich; Norbert Sparwell, Troisdorf, and Eugen Brockmann, Bad Soden am Taunus, all of Fed. Rep. of Germany, assignors to Battelle-Institut e.V., Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 21, 1981, Ser. No. 295,021

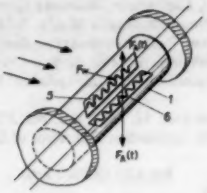
Claims priority, application Fed. Rep. of Germany, Aug. 29, 1980, 3032578

Int. Cl.³ G01F *1/86*

U.S. Cl. 73—861.03 **15 Claims**

1. Method for the dynamic and density-independent determination of the mass flow of fluids, comprising placing a single, rigid, fixed vortex-generating bluff body in the flow to generate vortices according to the principal of the Karman vortex path, determining the dynamic pressure ($\frac{1}{2}\rho v^2$), wherein ρ is the density and V is the velocity of flow, via the effect of the drag directly at said bluff body, said dynamic pressure being directly determined as an electric signal at said vortex-generating bluff body, determining the velocity of flow (v) via the effect of the vortex shedding at said bluff body, another electric signal being obtained which is due to the effect of the differential pressure generated by the vortex shedding in a direction normal to the direction of flow, the frequency of the

latter signal being a measure of the flow velocity, and determining the mass flow (m) according to the equation:



$$m=2\cdot(\tfrac{1}{2}\rho v^2)\cdot\tfrac{1}{2}\cdot A$$

wherein A is the cross section of the flow channel.

4,448,082

DIFFERENTIAL TYPE TRANSIT-TIME IONIC PICKUP

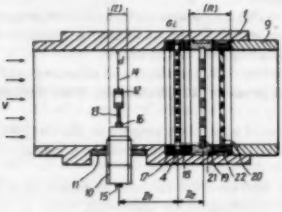
Roger Bariol, Olivet; Jackie Lecomte, Orleans, and Jean-Marie Bouvet, Boulogne-Billancourt, all of France, assignors to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Sep. 29, 1981, Ser. No. 306,851

Claims priority, application France, Oct. 7, 1980, 80 21400

Int. Cl.³ G01F *1/56, 1/70*

U.S. Cl. 73—861.05 **10 Claims**



1. Ionic transit-time pickup of the type which includes a body having an emission area (E) and a receiving area (R), associated with an electronic device making it possible to obtain an electric magnitude in the form of a pulse whose width depends on the volume flow of a gaseous fluid in an intake manifold, wherein said receiving area (R) comprises two parallel grids (19, 20) between which is measured the transit time of the ionized particles so that a differential measurement system is established and wherein said emission area (E) contains a multiplicity of emission electrodes (14, 27) which are equally distributed radially in a plane perpendicular to the stream of the gaseous fluid and which are supported by a portion (12) which is centered in said body.

4,448,083

DEVICE FOR MEASURING COMPONENTS OF FORCE AND MOMENT IN PLURAL DIRECTIONS

Junichi Hayashi, Akashi, Japan, assignor to Yamato Scale Company, Ltd., Hyogo, Japan

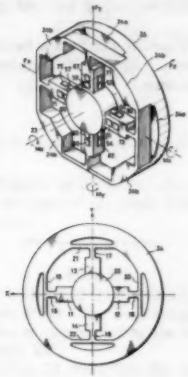
Filed Apr. 5, 1982, Ser. No. 365,797

Claims priority, application Japan, Apr. 13, 1981, 56-56004

Int. Cl.³ G01L *5/16*

U.S. Cl. 73—862.04 **3 Claims**

1. A device for measuring components of force and moment in plural directions, comprising a central hub portion, a rigid annular rim portion, a plurality of spoke portions extending outwardly from said hub portion with pairs of spoke portions positioned in mutually orthogonal radial directions and each having a rectangular cross-section with its width dimension parallel to the radial plane and its height dimension perpendicular to said radial plane, a plurality of chord portions each coupled laterally at its midway to the top to one of said spoke portions and also coupled at both ends to said rim portion for exhibiting substantial flexibility with respect to a bending force applied thereto along the extending direction of said spoke portion, and a plurality of strain detecting mechano-electric conversion elements attached to said spoke portions; wherein each of said spoke portions consists of a trunk section adjacent



to said hub portion and an end section adjacent to said chord portion, the width dimension of said end section being substantially less than that of said trunk section, substantially uniform in width throughout its length and symetrical about the axis of the associated trunk section whereby said end section exhibits substantial flexibility with respect to a twisting force applied thereto about the extending direction of said spoke portion, and said conversion elements are adhered to the four surfaces of said trunk sections.

4,448,084

NON-CONTACTING SHAFT POSITION SENSOR

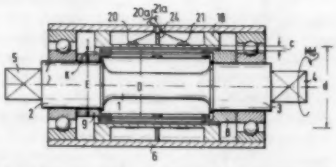
Klaus Dobler, Gerlingen, and Hansjörg Hachtel, Weissach, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 24, 1982, Ser. No. 381,316

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1982, 3209623

Int. Cl.³ G01L *3/10*

U.S. Cl. 73—862.33 **18 Claims**



18. Non-contacting relative shaft position sensor for determination of the relative position or rotation of a first shaft element (2, 5) with respect to a second shaft element (3, 4) axially aligned with the first shaft element, and relatively angularly shiftable with respect thereto, having

a first sleeve (9) secured to the first shaft, surrounding said shaft over a portion of its axial length, and rotatable therewith;

a second sleeve (8) secured to the second shaft and rotatable

therewith, concentric with the first sleeve and telescopically extending thereover, said first and second sleeves being relatively rotatable with respect to each other upon relative twist or rotation of said shaft elements;

means (11, 16, 17) for subdividing the circumferences of said sleeves into essentially part-cylindrical segments or portions (14, 15) of alternating high electrical conductivity (14, 15) and low electrical conductivity (11, 16, 17);

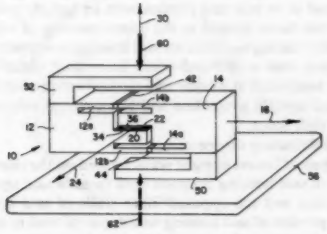
and an exciter winding means (20, 21) positioned for coupling high-frequency currents to said sleeves and inducing eddy currents in said sleeves.

4,448,085

FORCE TRANSDUCER

Shih-Ying Lee, Lincoln, Mass., assignor to Setra Systems, Inc., Acton, Mass.

Filed May 19, 1981, Ser. No. 265,087
Int. Cl.³ G01L *1/14*; G01G *3/08*
U.S. Cl. 73—862.64 25 Claims



25. A force transducer comprising:

A. a pair of elongated members, each of said members extending along a common central axis and having at least in part, complementary faces at their adjacent ends, each complementary face having at least one sensing portion angularly offset from said central axis by less than ninety degrees, wherein each elongated member includes at least one planar slot extending from its complementary face,

whereby upper and lower beam portions of said elongated member are spaced apart from each other in a direction of a first reference axis, said first reference axis being perpendicular to said central axis, said upper and lower beam portions being relatively flexible about axes parallel to a second reference axis, said second reference axis being perpendicular to said central axis and said first reference axis,

B. means for joining the upper beam portion of each of said pair of elongated members and the lower beam portions of the other said pair of elongated members to form a monolithic structure, wherein said complementary faces are mutually offset in the direction of said first reference axis, and are moveable in the direction parallel to said first reference axis and relatively immoveable otherwise,

C. a planar electrically conductive member on said sensing portions of said complementary faces,

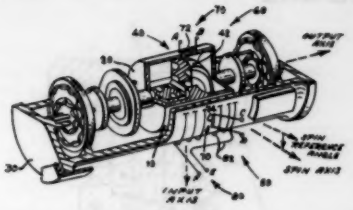
whereby the capacitance associated with said conductive members is related to the forces applied to said pair of elongated members.

4,448,086

TEMPERATURE CONTROLLED GYRO

John M. Kennel, Santa Ana, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 20, 1982, Ser. No. 380,451
Int. Cl.³ G01C *19/04*
U.S. Cl. 74—5 R 12 Claims



1. A gyroscope assembly, comprising:

a. a gyroscope;

b. a sealed inner container which houses said gyroscope;

c. a sealed outer container which houses said inner container;

d. a fluid interposed between said inner container and said outer container, whereby said inner container is supported by and floats in said fluid;

e. means, operably associated with said inner container and said outer container, for sensing the temperature respectively of said inner and outer containers and the difference in temperature thereof, wherein the temperature of said inner container is higher than the temperature of said outer container; and

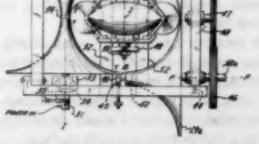
f. means, operably associated with said outer container and with said means for sensing the temperature respectively of said inner and said outer containers and the difference thereof, for raising the temperature of said outer container to the temperature of said inner container.

4,448,087

CONTINUOUSLY VARIABLE TORQUE TRANSMITTER

Eyal Barzel, 4707 Delafield Ave., Riverdale, N.Y. 10471

Filed Mar. 6, 1981, Ser. No. 241,028
Int. Cl.³ F16H *15/16, 15/08, 15/26*
U.S. Cl. 74—193 14 Claims



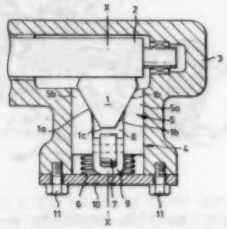
1. A continuously variable torque transmitter comprising a bi-rotor having a plurality of ovoids assembled to form a wheel whose perimeter is a substantially continuous circle, each ovoid being mounted for independent rotation about its axis and each ovoid defining a predetermined portion of the arc of the circle, the sum of the predetermined portions being substantially equal to said perimeter, and a frame holding the ovoids in assembled relationship.

4,448,088

RACK BAR AND PINION ASSEMBLY AND A STEERING GEAR INCLUDING SUCH AN ASSEMBLY

Frederick J. Adams, Clevedon, England, assignor to Cam Gears Limited, Hertfordshire, England

Filed Mar. 11, 1982, Ser. No. 357,312
Claims priority, application United Kingdom, Mar. 24, 1981, 8109108
Int. Cl.³ F16H 1/04; B62D 1/20
U.S. Cl. 74—422 9 Claims



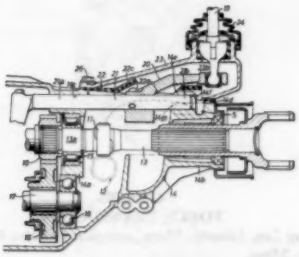
1. A rack and pinion assembly comprising:
a housing,
a pinion rotatively mounted in said housing,
a rack member movable in a longitudinal direction in said housing, said rack member having a rack thereon operatively connected with said pinion so that rotation of said pinion effects movement of said rack member in said longitudinal direction in said housing,
means for continuously supporting said rack member to maintain the operative connection between said rack and pinion and for preventing displacement of said rack member laterally of said longitudinal direction, and
additional means for supporting said rack member only when the load on said rack member exceeds a predetermined amount,
said means for continuously supporting said rack member and said additional means being located between said housing and said rack member on the side of said rack member remote from said rack,
said means for continuously supporting said rack member including:
a rack member carrier,
a spring means for biasing said rack member carrier into engagement with said remote side of said rack member, and
a means for constraining said rack member carrier for slidable movement in said housing in a direction substantially normal to said longitudinal direction of movement of said rack member and relative to said additional means,
said rack member carrier including two transversely spaced bearing surfaces,
said rack member having two transversely spaced support surfaces on said remote side continuously engaged by respective ones of said transversely spaced bearing surfaces, said transversely spaced bearing surfaces being inclined relative to said normal direction and converging towards a flat bottom support surface,
said additional means including a roller means for engaging said flat bottom support surface in a low friction manner, said roller means being spaced from said flat bottom support surface of said rack member when the load on said rack member is less than said predetermined amount, and means for supporting said roller means for rotation about an axis extending transverse to the longitudinal direction of movement of said rack and parallel to said flat bottom surface.

4,448,089

LUBRICATING DEVICE FOR CHANGE-SPEED GEARING UNITS

Kazuhito Ikemoto; Nobuaki Katayama; Yukio Terakura, all of Toyota, and Kan Sasaki, Shiratori, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Mar. 4, 1981, Ser. No. 240,330
Claims priority, application Japan, Aug. 20, 1980, 55-117922[U]
Int. Cl.³ F16H 57/04; F01M 9/00
U.S. Cl. 74—467 6 Claims



1. In a change-speed gearing unit having an extension housing having an upper opening portion and containing therein the rearmost gears of said change-speed gearing unit and being formed at its rear end portion with an upright projection having two faces located in the upper opening of said housing, a retainer casing mounted on said housing to support a shift lever thereon, and a shift-and-select lever shaft slidably and rotatably supported at its rear end portion by an axial bearing hole in said upright projection and being operatively connected to said shift lever,
a lubricating device comprising:
a pair of lateral upright walls formed on the rear end portion of said housing between both faces of said upright projection and the opposed inner walls of said upper opening portion of said housing to form an oil well in open communication with said axial bearing hole, and
an oil buffer member of elastic material having an outer periphery portion interposed between said housing and said retainer casing to cover the upper opening of said housing, said buffer member being integrally formed with a rearwardly and upwardly inclined portion for receiving the lubricating oil picked up by the rearmost gears and directing it into said oil well.

4,448,090

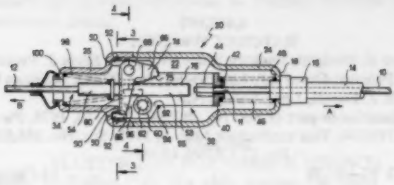
DEVICE FOR AUTOMATICALLY TAKING UP PLAY IN A MECHANICAL CONTROL

Jean-Jacques Carré, Montreuil, and Alain Thioux, Chennevières, both of France, assignors to Societe Anonyme DBA, Paris, France

Filed May 14, 1981, Ser. No. 263,613
Claims priority, application France, May 14, 1980, 80 10873
Int. Cl.³ F16C 1/10
U.S. Cl. 74—501.5 R 7 Claims

1. A compensating device for a mechanical control linkage adapted to be arranged between two consecutive portions of said control linkage and comprising first and second axially telescopic connecting parts movable axially within a stationary casing and respectively connected to said consecutive portions of said control linkage, releasable coupling means for selectively coupling said first and second connecting parts together for axial movement in one axial direction, said coupling means comprising an eccentric member pivotally mounted on said first connecting part and resiliently biased to come into engagement with an adjacent surface of said second connecting

part, and a lever means coupled to said eccentric member and cooperating in engagement with a first abutment surface in said



casing to release said coupling means when said control linkage is not actuated in said one axial direction.

4,448,091

SINGLE-SPOKE STEERING WHEEL

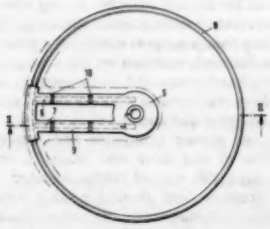
Wolfgang Bauer, Karlstein, and Werner Grosser, Sulzbach, both of Fed. Rep. of Germany, assignors to Karl Schmidt GmbH, Neckarsulm, Fed. Rep. of Germany

Filed Nov. 24, 1980, Ser. No. 209,802

Claims priority, application Fed. Rep. of Germany, Nov. 23, 1979, 2947197

Int. Cl.³ B62D *1/04*

U.S. Cl. 74—552 **4 Claims**



1. In a steering wheel having a steering heel hub, a single steering wheel spoke joined to the steering wheel hub and extending in a vertical center plane of the steering wheel, and a steering wheel rim joined to the steering wheel spoke, the improvement wherein: the hub comprises an aluminum pressure diecasting, one end of the spoke is embedded in the steering wheel hub and a pressure-diecast layer surrounds the spoke and a portion of the steering wheel rim to which the spoke is connected, wherein the pressure-diecast layer has circumferential indentations therealong forming breaking points.

4,448,092

GEAR TRANSMISSION FOR THE FINAL DRIVE OF HEAVY MOTOR VEHICLES

Bernhard Binger, Ravensburg, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen Aktiengesellschaft, Friedrichshafen, Fed. Rep. of Germany

Filed Aug. 22, 1980, Ser. No. 181,138

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1979, 2935376

Int. Cl.³ F16H *57/10*

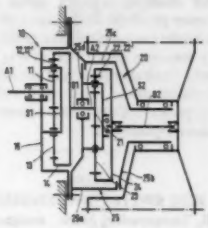
U.S. Cl. 74—770 **3 Claims**

1. A gear transmission forming a final drive in a power train of a heavy automotive vehicle, said gear transmission comprising:

a first set of intermeshing gears lying in a first plane and having an input shaft connected to one gear of said first set and a coupling shaft offset from said input shaft and connected to another gear of said first set;

a second set of intermeshing gears lying in a second plane parallel to said first plane and having said coupling shaft connected to one gear of said second set and an output shaft offset from said coupling shaft and connected to another gear of said second set; and

a common housing for both sets of gears having a support part and first and second housing parts respectively assigned to said first and second sets and each rotatably supporting at least one gear of the respective set, at least one of said sets being a planetary standing gear set with



planet gears journaled on fixed axes on the respective housing part and interposed between the said one gear and the said other gear of said sets, said housing parts being relatively displaceable angularly about the axis of the coupling shaft and duplicable relative to said support to vary an interaxial spacing of said input and output shafts without changing transmission ratio of said transmission, means being provided to affix said first and second housing parts to said support part.

4,448,093

STEPPING DRIVE MECHANISM

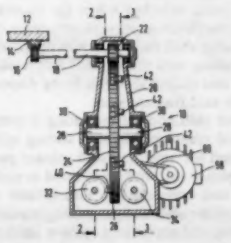
Reinfried Möller, Weinheim, Fed. Rep. of Germany, assignor to Expert Maschinenbau GmbH, Lorsch, Fed. Rep. of Germany

Filed Sep. 10, 1981, Ser. No. 300,885

Claims priority, application Fed. Rep. of Germany, Sep. 13, 1980, 3034627

Int. Cl.³ F16H *27/04, 1/16, 1/20*; B23B *29/24*

U.S. Cl. 74—821 **5 Claims**



1. Stepping drive mechanism for converting a constant input rotatory movement introduced into the mechanism, to a linear movement of given length, first in an acceleration phase from zero to a certain velocity value, then at constant velocity at said value, and finally in a deceleration phase from said velocity value back to zero, said mechanism comprising: two positively coupled cylindrical driving cams journalled in a housing and to which said constant input rotatory movement introduced into the mechanism is transmitted, said cylindrical driving cams having indexing grooves provided in their cylindrical circumferential surfaces, and indexing pins provided on a carrier component coupled with the mechanism and engaging said grooves, said indexing pin carrier component being a circular disk which is mounted for rotation about a horizon-

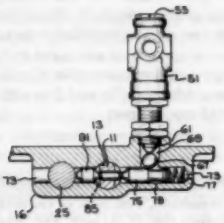
tally extending central axis in said housing and which has opposite flat sides from which said indexing pins project, one driving cam being associated with the acceleration-deceleration phases and arranged on one side of said disk and one with the constant-velocity value linear movement phase and arranged on the other side of said disk, said cams each having an axis of rotation disposed at right angles to said central axis of said disk, and the indexing grooves of said cams being engaged by an associated one of said indexing pins, the indexing pins associated with the acceleration-deceleration phase and with the phase of the constant-velocity linear movement being disposed on the same pitch circle diameter of the disk, said disk having at its circumference a circumferential toothing so as to form a vertically standing gear of relatively large diameter, a pinion of relatively small diameter and meshing with said gear, and a rack-and-pinion drive associated with said pinion for conversion of the pinion rotatory movement to a linear movement of said rack-and-pinion drive.

4,448,094

APPARATUS FOR SWITCHING ENGINE GOVERNOR

James A. Yarnell, Temperance, Mich., assignor to Dana Corporation, Toledo, Ohio

Filed Jul. 13, 1981, Ser. No. 282,246
Int. Cl.³ B60K *41/14, 41/16;* G05G *5/10*
U.S. Cl. 74—872 **8 Claims**



1. Apparatus for switching operation ranges for an air actuated governor for an engine of a vehicle, said governor establishing a maximum rpm for said engine when air under pressure is supplied to said governor and a lower maximum rpm for said engine when said supply of air to said govenor is interrupted, said lower rpm being selected when the transmission of said vehicle is in a preselected gear, said apparatus comprising:

at least one sliding shift rod for mounting gears positioned in said transmission, said sliding shift rod containing a notch on one end, said sliding shift rod being disposed for engaging a gear in said transmission;

a sliding splitter shift rod for mounting a splitter gear positioned in said transmission, said sliding splitter shift rod being disposed for engaging said splitter gear;

a secondary splitter shift rod positioned in said transmission adjacent to and connected to said splitter shift rod, said secondary splitter shift rod containing a notch on one end, said notch on said secondary splitter shift rod being disposed to be in alignment with said notch on said sliding shift rod when said shift rod is positioned to engage a preselected gear in said transmission;

a valve for controlling said supply of air to said governor, said valve including a valve stem for controlling the flow of air through said valve to said governor, said valve stem being operatively connected to said sliding shift rod and said splitter shift rod; and

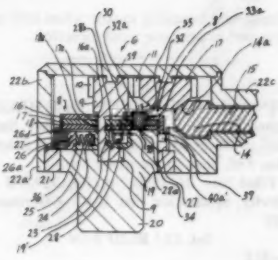
an interlock means operatively connected to said valve stem of said valve, said interlock means engaging said notch in said sliding shift rod and said notch in said secondary splitter shift rod when said shift rod is positioned to engage a preselected gear in said transmission whereby said interlock means allows said valve stem to move to a position when said transmission is in a preselected gear whereby said supply of air to said governor is interrupted and said governor switches to said lower maximum rpm range.

4,448,095

RATCHET WRENCH

Richard E. Blodgett, Basking Ridge, N.J., and Ervin J. Furedi, 223 Pleasant Grove Rd., Long Valley, N.J. 07853, assignors to Ervin J. Furedi, Long Valley, N.J.

Continuation-in-part of Ser. No. 083,380, Nov. 10, 1979, Pat. No. 4,318,314. This application Mar. 8, 1982, Ser. No. 355,529
Int. Cl.³ B25B *17/00*
U.S. Cl. 81—57.29 **13 Claims**



1. A novel ratchet wrench assembly having selectable ratcheting action to rotate a drive stud in alternately either direction, which comprises: a support structure; a drive stud means including a socket stud, mounted on the support structure; a first gear means fixedly mounted on the support structure for driving said drive stud means; a two-position ratchet means mounted on said drive stud means and including a first ratchet member with one portion positioned and adapted to effect ratcheting action of said drive stud means in one direction relative to an engagable second ratchet member mounted on said support structure, and another portion positioned and adapted to effect ratcheting action in another direction relative to the second ratchet member and a first toggle-spring having one end thereof mounted on the drive stud means and having an opposite end thereof spring-biased against the first ratchet member in an arrangement as to alternately bias the first and second portions into engagement with said second ratchet member; a drive shaft means for drivably engaging said first gear means; a barrel structure rotatable in alternately either of opposite directions and rotatably actuatable of the drive shaft means; first gear clutch means for providing freedom of reverse non-driving movement of said drive stud means, within a predetermined limited range of reverse non-driving movement within which reversing action may take place in direction of drive of the socket stud; and a reversible switch means for reversing in alternately each of opposite directions of driven movement of the drive stud means, said reversible switch means including a spring-biased toggle switch inclusive of a spring element having spaced-apart opposite first and second spring ends and having a central portion rotatably mounted on and movable with said drive stud means, said first spring end being mounted on and movable alternately in opposite directions with said first gear means, said two-position ratchet means including a lever member having a portion thereof freely movable alternately in opposite directions and fixedly mounting said second spring end, to move with the second spring end, and the lever member being in engagement with each of said first and second portions for alternate movement thereof into and away-from engagement with the second ratchet member, whereby alternately reverse-rotatable-turning of said barrel structure shifts said first ratchet member alternately between a first position of ratcheting by the first portion and non-ratcheting of the second portion, and a second position of ratcheting by the second portion and non-ratcheting of

the first portion, and whereby concurrently said first gear means beyond said predetermined limited range of freedom of reverse non-driving movement, is reversely drivable of said drive stud means.

4,448,096

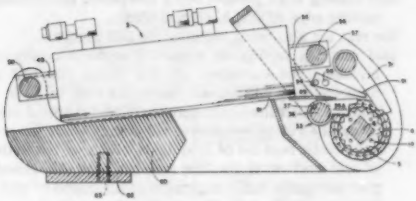
FLUTTER LIFT FOR TORQUE WRENCH

Bobby W. Collins, P.O. Box 1366, Harvey, La. 70059

Continuation-in-part of Ser. No. 218,663, Dec. 22, 1980, abandoned. This application Nov. 2, 1981, Ser. No. 317,325

Int. Cl.³ B25B *13/46*

U.S. Cl. 81—57.39 **2 Claims**



1. A hydraulic torque wrench having a ratcheting assembly comprising a ratcheting gear having gear teeth wherein said ratcheting gear is rotatably attached to a body assembly plate, a drive pawl attached at one end to a hydraulic cylinder piston rod and drivingly engageable at its opposite end to said ratcheting gear, the improvement to which comprises a drive pawl lifting assembly pivotly attached to said body which comprises:

(a) locking pawl pivotly attached at one end to said body assembly and having drive pawl teeth at its other end shaped to engage said gear teeth in a manner to prevent their rotation,

(b) means operatively attached to said locking pawl to engage and disengage said locking pawl from said gear teeth, and

(c) a flutter lift assembly pivotly attached at one end to said body assembly and having its opposite end positioned between the locking pawl other end and said drive pawl so that when said locking pawl is disengaged from said gear teeth it contacts and lifts said flutter lift assembly a distance sufficient to disengage said drive pawl from said gear teeth.

4,448,097

DRIVER TOOL

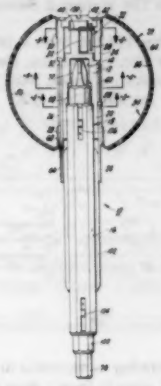
David Rocca, 4006 Greenacre Rd., Castro Valley, Calif. 94546

Filed Dec. 10, 1981, Ser. No. 329,303

Int. Cl.³ B25B *13/46*

U.S. Cl. 81—177 M **10 Claims**

1. A driver tool, comprising a handle, at least one driving bit, shaft means secured to said handle and adapted to secure said driving bit, and means for expanding a dimension of said handle, including a plurality of strips having like proximal ends joined to a proximal end portion of said handle, bushing means rotatable in common with said shaft means, said bushing means joined to like distal ends of said strips and translatable from a first position in which said strips are compressed longitudinally and expanded outwardly from said handle to a second position in which said strips are relaxed longitudinally and retracted toward said handle, means for releasably retaining said bushing



means in said first position, and means for transferring torque from said strips to said bushing means.

4,448,098

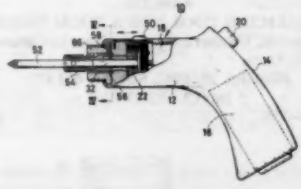
ELECTRICALLY DRIVEN SCREW-DRIVER

Katsuyuki Totsu, No. 1-17-8, Higashi-Mukojima, Sumida-ku, Tokyo, Japan

Filed Mar. 10, 1982, Ser. No. 356,895

Int. Cl.³ B25B *23/14*

U.S. Cl. 81—467 **8 Claims**



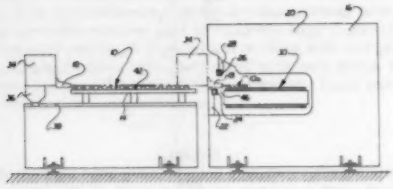
1. An electrically driven screw-driver comprising a ratchet device mounted to a portion of a chucking shaft to which a driver bit is detachably connected, said chucking shaft being connected to the output shaft of an electric motor through a planetary reduction system, said planetary reduction system comprising a plurality of planetary gears each capable to self-rotating and revolving around a pinion gear of a power transmission connected to the output shaft of the electric motor, and having an internal gear ring coacting with the planetary gears providing an orbit for their revolution, a cylindrical casing for rotatably receiving the internal gear and a torque controlling mechanism having a clutch function mounted between said casing and the planetary reduction system, said torque controlling mechanism comprising a steel ball contacting an outer circumferencial surface of the internal gear and means for pressing the steel ball against the internal gear with a predetermined pressure.

4,448,099

WORK HANDLING METHOD

Naoki Kuroda, Kyoto, and Kimihiro Tsuge, Inuyama, both of Japan, assignors to The Warner & Swasey Company, Cleveland, Ohio

Continuation of Ser. No. 127,801, Mar. 6, 1980, abandoned. This application Dec. 7, 1981, Ser. No. 328,380
Claims priority, application Japan, Mar. 24, 1979, 54-34722
Int. Cl.³ B26D 5/20
U.S. Cl. 83—23 1 Claim



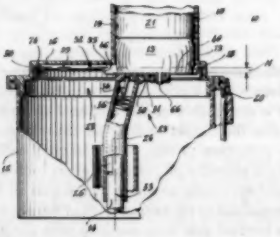
1. A method of operating an apparatus to cut scrap pieces off a sheet material workpiece to form a sheet material article of a desired configuration, said method comprising the steps of gripping the workpiece with a holder, moving the holder to position the workpiece between a pair of blades, effecting relative movement between the blades to cut a first scrap piece off of the workpiece, dropping the first scrap piece onto a conveyor which is separated from the blades by a clearance space and is disposed on a side of the blades opposite from the holder, subsequently moving the holder to change the position of the workpiece relative to the blades, cutting the article off of the workpiece to leave a second scrap piece in the holder, depositing the article on the cnveyor and moving the article away from the holder with the conveyor while gripping the second piece of scrap with the holder, thereafter extending the holder between the blades and across the clearance space to a location adjacent the conveyor, and dropping the second scrap piece onto the conveyor by actuating the holder to release the second scrap piece while the holder extends between the blades and across the clearance space.

4,448,100

ROTARY SLICING TOOL FOR A FOOD PROCESSOR

John W. Breeden, Westport, Conn., assignor to Cuisinarts, Inc., Greenwich, Conn.

Filed Jul. 26, 1982, Ser. No. 401,877
Int. Cl.³ B26D 7/00
U.S. Cl. 83—355 17 Claims



1. A rotary tool for use in a food processor of the type having a housing with motor drive means and a working bowl mountable on the housing and in which the rotary tool has an elongated hub with a lower end including coupling means removably engageable with said motor drive means for rotating said tool in said bowl about the axis of rotation of said coupling means, said rotary tool including

a horizontal disc-like member rotatable by said elongated hub in a predetermined direction of rotation,

a raised rim extending around the periphery of said disc-like member having a skirt extending downwardly therefrom,

an arcuate opening extending inward from said raised rim to a position near the center of said disc-like member,

a raised platform located immediately behind said opening with respect to said direction of rotation having a rearwardly sloping shoulder,

the forward edge of said platform overhanging the trailing portion of said opening for forming an elevated slot between the disc-like member and the forward edge of said raised platform,

a U-shaped cutting blade having a front leg and a rear leg,

said front leg of said U-shaped blade being mounted on the forward edge of said platform with the leading edge portion of said front leg overhanging said slot,

said leading edge portion being sharpened for forming the cutting edge of said U-shaped blade,

the rear leg also being mounted on said platform,

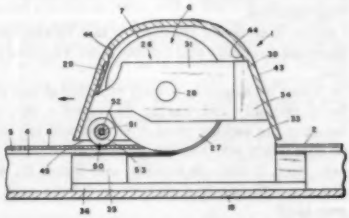
said rear leg having an arcuate peripheral configuration matching the curvature of said raised rim and being mounted snug against said raised rim with said rim at all points around the circumference of said disc-like member being at an elevation above said cutting blade for providing a clean, neat cut of food items which are fed to the top of said horizontal disc-like member with said raised rim preventing the radial expansion or distortion of said food items outwardly into the region between the rotary tool and the bowl in which it is being operated.

4,448,101

SHEAR CUTTER

John G. Templeton, Grand Rapids, Mich., assignor to Bulman Products, Inc., Grand Rapids, Mich.

Continuation-in-part of Ser. No. 126,960, Mar. 3, 1980, abandoned. This application Oct. 19, 1981, Ser. No. 312,393
Int. Cl.³ B26D 1/04, 1/14
U.S. Cl. 83—374 20 Claims



1. A cutter for material, comprising:

a cutter bar having a bottom wall, opposing side walls and first and second upper wall portions defining a hollow interior, said upper wall portions being spaced apart to define a longitudinal slot; said upper wall portions each having an outer surface;

a blade positioned in the hollow interior of said bar and extending substantially along the length thereof and including an upper edge disposed within said longitudinal slot; said blade being mounted in said cutter bar in a manner which permits lateral displacement of the upper edge of said blade;

a movable knife connected with said cutter for translation along said slot, and including a cutting edge abuttingly engaging the upper edge of said blade for cutting material therebetween as said knife is moved along said bar; said blade having an extended, cutting position, wherein the upper edge of said blade is disposed substantially flush with the outer surface of said upper wall portions for cutting the material, and a retracted, storage position

wherein the upper edge of said blade is disposed below the outer surface of said upper wall portions for storage;

resilient means for normally retaining said blade in the storage position; and wherein

said knife is positioned over said slot in a location such that engagement between said knife and said blade shifts said blade from the storage position to the cutting position.

4,448,102

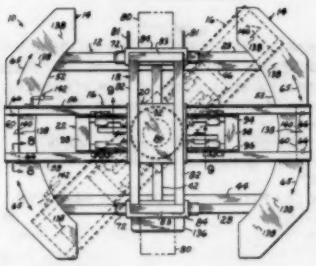
COMPOUND MITER SAW STAND

Jack L. Thornton, P.O. Box 222400, Carmel, Calif. 93922

Filed Nov. 19, 1982, Ser. No. 443,090

Int. Cl. B27B *9/04*; B27G *5/02*

U.S. Cl. 83—471.1 **10 Claims**



1. A miter saw guide for forming miter cuts on a workpiece, comprising:

upright rigid frame means having opposing sides and end portions;

a horizontal track plate transversely overlying the respective frame means end portion;

bridge means overlying said frame means in vertically spaced relation medially its end portions for defining a horizontal workpiece supporting travel path extending transversely of said frame means;

track means extending longitudinally of said frame means in overlying relation with respect to said workpiece travel path and said track plates for horizontal pivoting movement in opposing directions with respect to the longitudinal axis of the workpiece travel path;

turntable bearing means centrally interposed between and connecting said track means with said bridge means for defining a vertical pivoting axis for said track means;

cradle means supported by said track means for reciprocating movement between its respective ends; and,

at least one electric hand saw supported by said cradle means.

4,448,103

TUNABLE BASS-TONE DEVICE

Bill W. Blakely, 553 NW. Sweetbriar, and Robert Reece, 1423 SE. Lane St., both of Roseburg, Oreg. 97470

Filed Nov. 2, 1981, Ser. No. 317,255

Int. Cl.[3] G10H *1/36, 5/06*

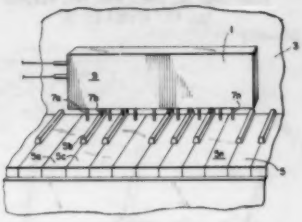
U.S. Cl. 84—1.01 **5 Claims**

1. A bass-tone device for use with a piano having a keyboard, said device comprising:

(a) a housing, for mounting on a piano above the keyboard thereof;

(b) a plurality of switch means mounted in said housing, each of said switch means having an engaging portion extending from said housing for contacting a key of the piano and for remaining in contact with the key for at least a portion of the movement thereof, wherein when a key is depressed, the engaging portion of the switch means in contact therewith, moves, thereby changing the state of said switch means; and

(c) bass-tone generator means mounted in said housing and having said switch means connected thereto, said bass-



tone generator means generating bass-tone signals in response to the change of state of said switch means.

4,448,104

ELECTRONIC APPARATUS HAVING A TONE GENERATING FUNCTION

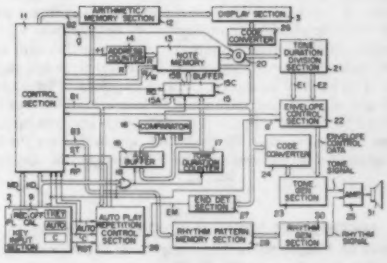
Toshifumi Hoshii, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 331,173, Dec. 16, 1981, abandoned. This application Oct. 11, 1983, Ser. No. 540,699

Claims priority, application Japan, Dec. 24, 1980, 55-181920

Int. Cl.[3] G10H *1/26, 7/00*

U.S. Cl. 84—1.01 **9 Claims**



1. An electronic apparatus having a tone generating function, comprising:

input means for inputting note data;

memory means for storing the note data input by operation of said input means;

a readout key which is provided independently from said input means and which is operable for reading out the note data from said memory means sequentially one by one every time the readout key is operated, after said note data is stored in said memory means by said input means;

first detecting means for detecting a key-on period during which said readout key is kept operated;

second detecting means for detecting a key-off period during which said readout key is not operated;

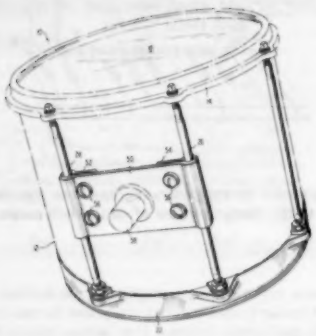
duration input means coupled to said first and second detecting means for inputting tone duration information into said memory means, said input tone duration information designating tone producing intervals and tone releasing intervals according to the key-on period and the key-off period, respectively, with respect to each input note data.

4,448,105

DRUM CONSTRUCTION

Charles P. Cordes, 27 Kenneth Pl., Clark, N.J. 07066

Filed Sep. 30, 1982, Ser. No. 429,635
Int. Cl.[3] G10D 13/02
U.S. Cl. 84—413 4 Claims



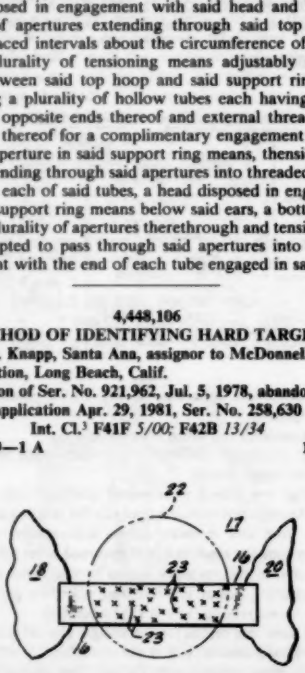
1. A drum comprising an annular shell having top and bottom edges, supporting ring means disposed in abutting engagement with said bottom edge of said shell and having a plurality of laterally outwardly extending ears spaced equidistantly about the circumference of said support ring means with each ear having a threaded aperture extending therethrough, a head disposed in engagement with the top edge of said shell, a top hoop disposed in engagement with said head and having a plurality of apertures extending through said top hoop at equally spaced intervals about the circumference of said top hoop, a plurality of tensioning means adjustably interconnected between said top hoop and said support ring means comprising a plurality of hollow tubes each having internal threads at opposite ends thereof and external threads at the lower end thereof for a complimentary engagement with the threaded aperture in said support ring means, thension screw means extending through said apertures into threaded engagement with each of said tubes, a head disposed in engagement with said support ring means below said ears, a bottom hoop having a plurality of apertures therethrough and tension screw means adapted to pass through said apertures into threaded engagement with the end of each tube engaged in said ears.

4,448,106

METHOD OF IDENTIFYING HARD TARGETS

Richard D. Knapp, Santa Ana, assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Continuation of Ser. No. 921,962, Jul. 5, 1978, abandoned. This application Apr. 29, 1981, Ser. No. 258,630
Int. Cl.[3] F41F 5/00; F42B 13/34
U.S. Cl. 89—1 A 14 Claims



1. The method of using a plurality of kinetic penetrator elements to identify a hard target and distinguish said target from other, more penetrable areas adjacent said target to enable subsequent bombardment of a thus-identified target by direct aiming of projectiles at said target comprising the steps of:

dropping a plurality of said elements in a region in which potential targets may be located, which elements have means for reflecting electromagnetic radiation received from a remote source to indicate their presence to a remote detector when in contact with a target and the capability of penetrating to the point of disappearance those areas adjacent a hard target which are not part of the target to be identified transmitting electromagnetic radiation from said remote source in the direction of said region; and

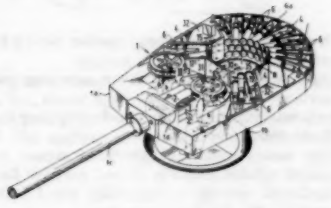
detecting said reflected electromagnetic radiation from said elements in contact with a target in order to identify the location of said target.

4,448,107

ROUND-HANDLING SYSTEM FOR A MOBILE WEAPON

Ferenc Kotai; Markus Spotzl; Erich Drosen, all of Munich, and Leo Pongratz, Karlsfeld, all of Fed. Rep. of Germany, assignors to Krauss-Maffei Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Mar. 29, 1982, Ser. No. 363,287
Claims priority, application Fed. Rep. of Germany, Apr. 1, 1981, 3113027
Int. Cl.[3] F41H 7/06, 7/04, 5/20; F41F 9/06
U.S. Cl. 89—36 K 20 Claims



1. In a tank having a rotatable turret provided with a barrel-type weapon swingable in a vertical plane of said turret, a magazine containing a multiplicity of round to be supplied to said weapon, and a loading device adapted to remove the round from said magazine and transfer it to said weapon, said turret being formed with a crew compartment and a munitions compartment, said munitions compartment containing said magazine and said device, said weapon terminating in said crew compartment, the improvement wherein:

said munitions compartment is confined to a rear portion of said turret;

said crew compartment occupies a forward portion of said turret;

said magazine has the configuration of at least one annular nonrotatable sector receiving said rounds with said rounds turned toward a centrum of said sector in a chamber partly surrounded by said sector, said sector being oriented horizontally in said turret and being swingable on said turret with said weapon for traversing said weapon, and said sector having at least one layer of rounds lying substantially at the level of said opening in a horizontal position of said weapon;

said weapon has a breach turned toward said chamber;

said loading device comprises a rotatable body in said chamber and means on said body selectively alignable with said rounds in said magazine and with said breach for withdrawing rounds from said magazine and then inserting them into said breach;

an armored partition being provided between said compartments having a hole aligned with said opening in a hori-

zontal position of said weapon whereby rounds can be fed through said hole; and

means including an armored cover being provided in said turret for closing said hole.

4,448,108

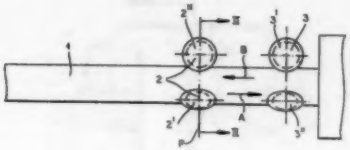
GUIDE SYSTEM FOR A GUN BARREL

Rainer Moller, Schweinfurt, and Günter Scharting, Gochsheim, both of Fed. Rep. of Germany, assignors to Fag Kugelfischer Georg Schäfer & Co., Schweinfurt, Fed. Rep. of Germany

Filed May 3, 1982, Ser. No. 374,036

Int. Cl.³ F41F *19/00*

U.S. Cl. 89—37 R **5 Claims**



1. A guide arrangement for a cannon barrel comprising a pair of guide units spaced apart along said barrel and enabling longitudinal displacement thereof, each of said units comprising a plurality of guide rollers spaced around said barrel and engaging same, the rollers of each unit being mutually coplanar and including at least one yieldably biased roller bearing upon said barrel, comprising an axle, and yieldable upon thermal expansion thereof so as to prevent development of play between said units and said barrel, and means comprising elastic elements bearing against said axle for biasing said yieldable rollers against said barrel.

4,448,109

AUTOMATIC OR SEMI-AUTOMATIC FIREARM

James H. Johnson, 818 S. Willow Ave., Tampa, Fla. 33606

Filed Oct. 13, 1981, Ser. No. 311,090

Int. Cl.³ F41D *11/02*

U.S. Cl. 89—141 **9 Claims**

1. A trigger mechanism for a firearm, comprising in combination:

a hammer/sear pivotably positionable to a firing position, a searing position, and recessed position;

first means for urging said hammer/sear from said recessed position to said searing position, and further to said firing position;

a hammer link moveable to and from a rearward position, an intermediate position, and a forward position;

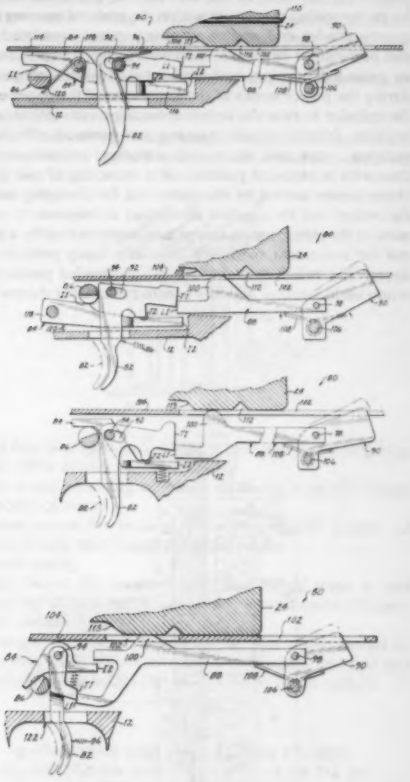
said hammer link pivotably connected to said hammer/sear to lock said hammer/sear into said recessed position when said hammer link is in said intermediate position, to permit said first urging means to pivot said hammer/sear to said searing position when said hammer link is in said forward position, and to permit said first urging means to pivot said hammer/sear to said firing position when said hammer link is in said forward position;

second means for urging said hammer link upwardly;

a trigger pivotably connected to the firearm, said trigger including a projection which engages said hammer link to prevent said hammer link from moving forward until said trigger is pulled;

means for urging said trigger in a direction opposite to that in which said trigger is pulled;

an interruptor for holding said hammer link in the fully rearwardly position when said trigger is pulled; and



a selector in engagement with said interruptor to lock said interruptor in and out of operable engagement with said hammer link.

4,448,110

HYDRAULIC PUMP

Paul R. Polak, and Daniel E. Jantzen, both of Arvada, Colo., assignors to P & W Pumping-Jack Co., Arvada, Colo.

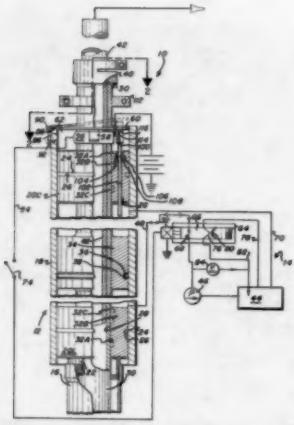
Continuation of Ser. No. 125,182, Feb. 27, 1980, abandoned. This application Oct. 20, 1981, Ser. No. 313,234

Int. Cl.³ F01L *25/08, 31/08, 23/00*

U.S. Cl. 91—275 **6 Claims**

1. A pump jack for use on a well having a fixed casing accessible at the wellhead and a sucker rod string disposed within the casing for reciprocating movement which comprises: a hydraulic cylinder having upper and lower ends, said lower end being connectable to the casing in substantially coaxial relation atop thereof, and said lower end having a centrally-located opening therein sized to pass the sucker rod axially therethrough; a piston housed within the cylinder for axial movement between the ends thereof, said piston having a central opening therein sized to pass the sucker rod; a hollow piston rod fastened in coaxial position to the piston for movement therewith, said piston rod extending both above and below the piston being sized to telescope down over the sucker rod; said upper cylinder end having a central opening therein sized and adapted to receive the piston rod for relative axial

movement therein while maintaining a fluid-tight seal thereabout, said upper cylinder end having a pushrod opening therethrough substantially paralleling the central opening therein but displaced to one side thereof; a pushrod mounted for reciprocating movement within the pushrod opening in the upper cylinder end; switch-actuating means associated with said pushrod for movement therewith between a retracted and an extended position; said pushrod and piston cooperating during the power stroke of the latter toward the upper end of the cylinder to raise the switch-actuating means into extended position; friction means engaging said pushrod effective to maintain same and the switch-actuating means associated therewith in extended position upon retracting of said piston; clamp means carried by the piston rod for clamping same to the sucker rod for conjoint movement in response to movement of the piston; means comprising a stop carried by a piston rod for movement therewith, said stop being positioned to engage the switch-actuating means in extended position and return same together with the pushrod associated therewith to its retracted position by overpowering said friction means during the return stroke of the piston; first conduit means connectable to a source of fluid under pressure connected into the lower end of the cylinder; second conduit means connectable to the first conduit means for returning fluid exhausted from the cylinder to a reservoir; an electrically operated control valve operative in a first position to disconnect the second conduit from the first and connect the latter to the source of fluid under pressure, and said control valve being operative in a second position to disconnect said first conduit means from the pressurized source and connect same to the second conduit means; and, an electrical circuit including said valve and switch means for controlling the latter, said switch means being positioned for actuation by said switch-actuating means as the latter moves between its retracted and extended positions, said switch means being operative in the retracted position of said switch-actuating means to shift said valve into its first position, and said switch means being operative in the extended position of said switch-actuating means to shift said valve into its second position.

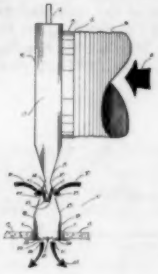


4,448,111

VARIABLE VENTURI, VARIABLE VOLUME, AIR INDUCTION INPUT FOR AN AIR CONDITIONING SYSTEM

Robert Doherty, 3455 Budleigh Dr., Hacienda Heights, Calif. 91745

Filed Jan. 2, 1981, Ser. No. 222,721
Int. Cl.³ F24F *13/06*
U.S. Cl. 98—38 E **8 Claims**



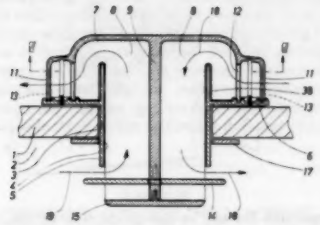
1. A variable Venturi, variable volume, air induction, input for an air conditioning system for controlling the amount of ambient air inducted into an air conditioning system comprising: in an air conditioning system having an input duct provided with an upstream end adapted to be connected to an air-temperaturemodifying and air-moving apparatus at said upstream end thereof and having a downstream end provided with, and connected to, an air-diffusing plenum chamber, the provision of an output duct connected to the plenum chamber at one end and at another end to the interior of a room which is to be air conditioned, said output duct being positioned between said plenum chamber and the interior of a room which is to be air conditioned and being provided with controllably adjustable variable Venturi means in circuit therewith and being provided with and operatively connected to a control member for varying said variable Venturi means between a substantially fully open relationship with respect to the interior of said output duct and an inner, constricted, maximum-closed relationship with respect to the interior of said output duct whereby to reduce the volume of air flow therethrough from the plenum chamber into the interior of the room while increasing the linear velocity thereof; and lateral air induction opening means extending laterally through said output duct from the exterior thereof to the interior thereof adjacent to said variable Venturi means and in direct exterior-to-interior communication with the variable volume, variable linear velocity, interior air passing through the interior of said output duct and said variable Venturi means between the plenum chamber and the room to be air conditioned whereby to cause correspondingly variable induction of ambient air from a position exterior of said air induction opening means in said output duct into the interior thereof for feeding movement thereof and effective mixing thereof with the air passing through said output duct from the plenum chamber to the interior of the room to be air conditioned; said variable Venturi means comprising first inner walls surfaces of said output duct smoothly and continuously converging in a downstream direction into a reduced cross-sectional area and then further comprising second inner wall surfaces of said output duct smoothly and continuously diverging in a downstream direction from said first wall surfaces and additionally comprising multiple controllably opposedly and correlatedly pivotally movable swinging volume dampers hingedly mounted to the inner wall surfaces slightly downstream from said reduced cross-sectional area at transversely spaced locations, said dampers having inwardly and outwardly swingably movable airflow-modifying downstream ends located closely adjacent to said reduced cross-sectional area; said

lateral air induction opening means being positioned in said second wall surfaces of the output duct downstream from said reduced cross-sectional area and slightly upstream from said free air-flow-modifying downstream ends of said swinging dampers.

4,448,112
VENTILATOR

Ramon Söderberg, Sörgårdsvägen 5, S-443 00 Partille, Sweden

PCT No. PCT/SE80/00189, 371 Date Mar. 8, 1982, 102(e) Date Mar. 8, 1982, PCT Pub. No. WO82/00336, PCT Pub. Date Feb. 4, 1982
PCT Filed Jul. 14, 1980, Ser. No. 359,657
Int. Cl.³ B63J 2/04
U.S. Cl. 98—62 **5 Claims**



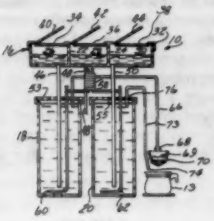
1. A ventilator for air ventilation between a delimited space and the outside air, said ventilator being adapted to be inserted in an opening in a partition wall between said space and the outside air and also adapted to form a connecting passage therebetween, said passage being divided into a plurality of passage sections, at least one external, partly closed, cover portion and partitions separating said passage sections from each other, said partitions being directed symmetrically with substantially the same length outwards from a central longitudinal axis of said connecting passage, each of said sections being adapted to maintain communication between the outside air and said space and also comprising in its outer end, facing the outside air, a number of outer openings and in its inner end facing said space a number of inner openings, at least said outer openings being directed sideways in relation to said longitudinal axis so as to be distributed over the periphery of the ventilator, said passage sections and said partitions being eight in number and with the angle between two adjacent partitions amounting to 45°, said cover portion being provided with a peripheral substantially circularly extended wall which by means of said outer openings is divided into a plurality of wall portions, and covering part of the outer end of the connecting passage, said outer openings and said wall portions being at least two in number for each passage section, said partition having end portions positioned outside of said partition wall between said space and the outside air and extending radially outwards up to said circularly extending peripheral wall, and said inner openings being directed sideways in relation to the longitudinal axis of the connecting passage, and the passage sections comprising at their inner end an adjustable wall portion for varying their effective length.

4,448,113
COFFEE REFRESHENER

David L. Brabon, 401 Kenyon Ave., Wilmore, Ky. 40390

Filed Sep. 29, 1982, Ser. No. 428,006
Int. Cl.³ A47J 31/00
U.S. Cl. 99—290 **5 Claims**

1. A drip coffee maker for brewing a coffee beverage from roasted and ground coffee, said drip coffee maker comprising:
a drop brew basket filter means for receiving a bed of roasted and ground coffee;
means for providing a predetermined quantity of heated water for drip extraction from said roast and ground coffee, the improvement comprising:
a first liquid receiving means for receiving a predetermined quantity of water;
a first means for heating said predetermined quantity of water;
a first conduit communicating said heated water to said drip brew basket;
a second liquid receiving means for receiving a predetermined amount of coffee extract;
a first outlet;
second conduit means independent of said first conduit means for communicating said coffee extract to said first outlet via

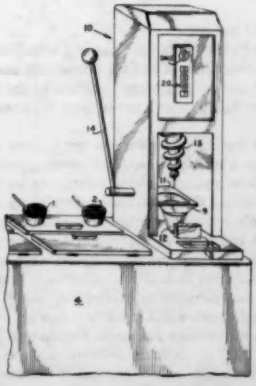


said first heating means so as to reheat said coffee extract as said coffee extract passes thereby;
a third liquid receiving means for receiving a predetermined quantity of water;
a second means for heating said predetermined quantity of water in said third liquid receiving means;
a second outlet;
a third conduit for communicating said heated water in said third liquid receiving means to said second outlet independent of said drip brew basket; and
said second means for communicating said coffee extract to said first outlet communicating same via both said first and second heating means for reheating said coffee extract.

4,448,114
APPARATUS FOR PROCESSING FROZEN COMESTIBLES AND IN PARTICULAR TO AN IMPROVEMENT THEREIN

David Mayer, Scarsdale, N.Y., assignor to Custom Creamery Systems, Inc., New York, N.Y.

Filed Mar. 24, 1983, Ser. No. 478,219
Int. Cl.³ A23G 9/02, 9/04, 9/12
U.S. Cl. 99—494 **3 Claims**



1. In an apparatus for processing frozen comestibles said

apparatus having a cup for receiving a frozen comestible; rotatable auger means; means mounting said cup and auger means for related movement toward and away from each other; means adapted to actuate said related movement of said cup and auger and move said auger means into and out of said cup in a first related relatively brief movement; said first related movement adapted to create a pocket in a frozen comestible placed in said cup; said pocket adapted for the insertion of flavoring material; and in a second relatively longer related movement actuatable by said means adapted to actuate said related movement of said cup and auger to mix said frozen comestible and said flavoring material and extrude the mixture from said cup, the improvement comprising: means for counting the number of second related movements extruding said mixture, said counting means including means for distinguishing between said first and second related movements and for counting only the second related movements, said distinguishing means comprising a timer actuated by the related movements and having a duration greater than that of said first related movement and less than that of the second related movement, and said counting means only counting when the second related movement is actuated after the duration of the timer.

4,448,115

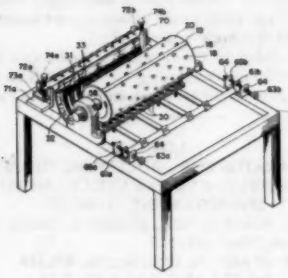
APPARATUS FOR HULLING PISTACHIO NUTS

Joseph Volk, Sr., 766 First St., Apt. 21, Gilroy, Calif. 95020, assignor to Benjamin Volk, Gilroy, Calif.

Division of Ser. No. 275,263, Jun. 19, 1981, Pat. No. 4,353,931. This application Jun. 21, 1982, Ser. No. 390,549

Int. Cl.³ A23N *5/00*

U.S. Cl. 99—574 **15 Claims**



1. A huller for removing hulls from pistachio nuts comprising:

(a) support means;

(b) means having slots for receiving unhulled pistachio nuts on a surface thereof and for contacting said nuts received on said surface and being attached to the support means, said slots being more narrow than the pistachio nuts to be hulled;

(c) means having a plurality of projections outwardly disposed on a surface thereof for pushing said nuts with said projections and for forcing contact of said nuts with said means having slots, said projections being spaced apart on said surface having projections, said surface having projections being movably mounted on the support means with said surface having projections being disposed in close proximity to said surface of said means having slots, so that said projections extend into said slots; and

(d) means for moving said surface having projections coupled to said means having a plurality of projections for passing said projections through said slots whereby unhulled pistachio nuts deposited in abrading engagement between said surface having projections and said surface of said means having slots are hulled.

4,448,116

APPARATUS FOR THE DRY SALTING OF CURD FOR CHEESE PRODUCTION

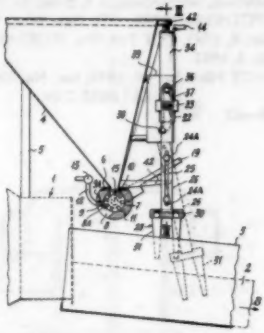
Gabriele Muzzarelli, Via Marzabotto, 116-Modena 41100, Italy

Filed May 7, 1982, Ser. No. 376,548

Claims priority, application Italy, Jun. 23, 1981, 22513 A/81

Int. Cl.³ A01J *25/00*; A23C *19/064*

U.S. Cl. 99—460 **9 Claims**



1. Apparatus for use in the production of cheese and, in particular, for introducing salt into and mixing salt within a mass of curd in its plastic or pliable state, comprising:

means for conveying the plastic curd in a stream having a free surface along a path in a downstream direction;

a hopper adapted to contain salt, said hopper having an outlet;

means disposed at said hopper outlet for dispensing metered quantities of salt onto the free surface of the stream of plastic curd at a first upstream region along the path of movement of the curd stream as the same is being conveyed;

a movably mounted comb member situated over a second region along the path of movement of the curd stream, said second region being located downstream of said first region; and

means for movably driving the comb member so that the comb member penetrates the free surface of the plastic curd stream moving on said conveying means to substantially uniformly introduce the salt dispensed onto the curd stream by said dispensing means through the mass of the curd stream.

4,448,117

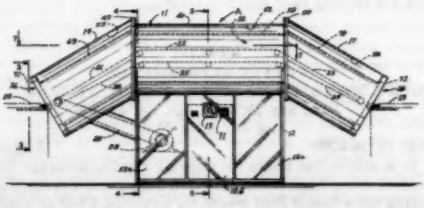
HUMPBACK OVEN-BROILER

Harold D. Wells, St. Louis County, Mo., assignor to Pet Incorporated, St. Louis, Mo.

Continuation of Ser. No. 380,552, May 21, 1982, abandoned. This application Jul. 25, 1983, Ser. No. 516,868

Int. Cl.³ A47J *27/62*

U.S. Cl. 99—331 **11 Claims**



1. A tunnel oven-broiler for flame-controlled tunnel oven

broiling of food products of ordinarily flame-producing character such as steaks, chops or other greasy meats prone to burn or produce flame, said oven-broiler comprising a tubular, tunnel-form heating chamber and a conveyor therein for broiling of said food products by infrared heating, means for heating surfaces of said chamber for emission of energy into said chamber for absorption by said food products characterized by means for defining an open entrance and open exit at opposite ends of said chamber such that said entrance and exit are oriented relatively lower than said chamber to entrap within said chamber an oxygen-starved atmosphere having a slight overpressure for suppressing flaming or flaring during broiling of said food products, venting means for selectively venting said atmosphere for control of said atmosphere, means for removing from said chamber grease and other flammable liquids produced by heating of said food products, means for directly sensing the emission temperature of the heated surfaces of said chamber, and control means for controlling said heating means to maintain said emission temperature substantially at a predetermined level, said venting means providing venting from said atmosphere at opposite ends of said chamber proximate the highest points of said entrance and exit, respectively, and tubular inner and outer members, said inner members defining said chamber, and tubular end sections interconnected with said inner member to provide said means defining said entrance and exit.

4,448,118

CLEANING AND PEELING MACHINE

Paul Kunz, Deishardtstr. 3, D-5419 Döttesfeld, Fed. Rep. of Germany

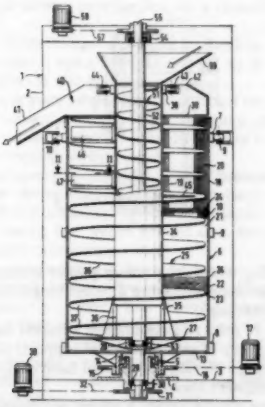
PCT No. PCT/EP82/00064, 371 Date Nov. 22, 1982, 102(e) Date Nov. 22, 1982, PCT Pub. No. WO82/03314, PCT Pub. Date Oct. 14, 1982

PCT Filed Mar. 24, 1982, Ser. No. 448,981

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1981, 3113348

Int. Cl.³ A23N *7/00*

U.S. Cl. 99—624 **8 Claims**



1. A cleaning and peeling machine comprising a vertically-disposed first rotatable cylinder defined by a cylindrical side wall containing openings and a closed imperforate lower end, said first cylinder being open at its upper end, a second rotatable cylinder defined by an imperforate, cylindrical side wall, said second cylinder being open at its upper and lower ends and being supported in the first cylinder in concentric relation thereto for rotation about its axis, with its open lower end spaced above the closed lower end of the first cylinder and its open upper end extending above the open upper end of the first cylinder, said second cylinder being of smaller diameter than the first cylinder such as to define therewith an annular chamber in communication at its lower end with the open lower end of the second cylinder and open at the upper end of the first cylinder, a first screw-like element comprising a helical blade fixed to the outer side of the side wall of the second cylinder and extending from the top to bottom thereof, the lower end of said first screw-like element being adjacent the open lower end of the second cylinder such as to receive product to be peeled from the lower open end of the second cylinder, a second screw-like element comprising a shaft to which is fixed a helical blade supported within the second cylinder in concentric relation therewith for rotation about the axis of the shaft with its upper end adjacent the open top of the second cylinder, first means supported above the open upper end of the second cylinder for delivering product to be processed into the open upper end of the second cylinder onto the upper end of the second screw-like element, second means supported above the open upper end of the annular chamber for receiving peeled product from the upper end of the first screw-like element and means for rotating the first and second screw-like elements independently of each other in directions to move the product to be processed downwardly in the second cylinder and processed product upwardly in the annular space between the first and second cylinders and wherein the openings in the side wall of the first cylinder provide for discharge of the peelings.

4,448,119

TOGGLE PRESS

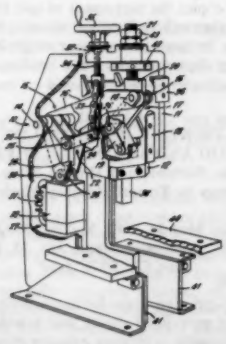
Hugh E. Williamson, London, England, assignor to Hugan Limited, London, England

Filed Jun. 9, 1982, Ser. No. 386,831

Claims priority, application United Kingdom, Jun. 17, 1981, 8118678

Int. Cl.³ B30B *1/16*

U.S. Cl. 100—231 **19 Claims**

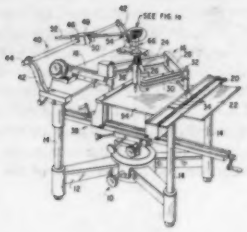


1. A toggle press comprising a main frame and a tool holder mounted for reciprocal movement relative to the frame by power means actuating an intermediate toggle arrangement comprising two toggle mechanisms acting in series, said toggle mechanisms being carried on a sub-frame which is pivotally mounted on the main frame, said press having means for adjusting the position of the sub-frame and thereby the operating position of the tool holder and a press tool therein.

4,448,120
CALLIGRAPHIC APPARATUS AND METHOD AND ENGRAVING TOOL FOR USE IN CONNECTION THEREWITH

William A. Richardson, 608 Snyder Ave., and Douglas A. Richardson, 27 Canterbury La., both of Berkeley Heights, N.J. 07922

Continuation of Ser. No. 275,390, Jun. 19, 1981, which is a continuation-in-part of Ser. No. 240,574, Mar. 4, 1981, abandoned. This application May 10, 1983, Ser. No. 492,154
The portion of the term of this patent subsequent to Jan. 25, 2000, has been disclaimed.
Int. Cl.³ B41F *1/07*
U.S. Cl. 101—32 12 Claims



1. Calligraphic apparatus, comprising holding means for holding a workpiece to be lettered, lettering means for calligraphically lettering a workpiece held by said holding means, said lettering means including an engraving tool having an elongate, continuously straight chisel-pointed tip which has an included angle in a range of from about 80° to about 120°, positioning means for fixedly positioning single-line indicia relative to a workpiece held by said holding means, following means for following single-line indicia fixedly positioned by said positioning means, connecting means for connecting said lettering means to said following means such that the movement of said lettering means copies the movement of said following means, and attaching means for attaching said lettering means to said connecting means such that said lettering means continuously and automatically rotates relative to said connecting means without rotating relative to a workpiece held by said holding means during the movement of said lettering means as it copies the movement of said following means, whereby single-line indicia fixedly positioned by said positioning means may be used to produce single-line calligraphic lettering on a workpiece held by said holding means.

4,448,121
ROTARY PRINTING PRESS AND INSPECTION METHOD AND APPARATUS THEREFOR

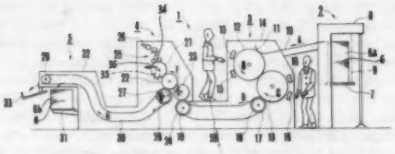
Chiyomatsu Uno, Saitama, and Hiroshi Muto, Chiba, both of Japan, assignors to Komori Printing Machinery Co., Ltd., Japan

Filed May 21, 1982, Ser. No. 380,508
Claims priority, application Japan, Jun. 13, 1981, 56-91363
Int. Cl.³ B07C *5/34*
U.S. Cl. 101—76 17 Claims

1. In a rotary printing press for sequentially printing additional indicia on preprinted sheets, said printing press having an impression cylinder, a printing cylinder disposed parallel to and in engagement with said impression cylinder and selectively movable out of engagement therewith, input sheet feeding means sequentially supplying preprinted sheets to said impression cylinder for printing, and output sheet feeding means sequentially removing said preprinted sheets from said impression cylinder, the improvement comprising:

automatic defect detection means for detecting defects on said preprinted sheets, said automatic defect detection means being disposed adjacent said input means such as to inspect said preprinted sheets as they are sequentially supplied to said impression cylinder;

printing cylinder moving means selectively operable to temporarily move said printing cylinder away from said impression cylinder in response to the detection of a defective preprinted sheet by said automatic defect detection means, such that said additional indicia is not printed on preprinted sheets on which a defect is detected; and

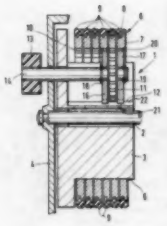


sorting means disposed along said output means and responsive to the detection of defects in said preprinted sheets by said automatic defect detection means to sort said preprinted sheets into a first output stream of defective preprinted sheets and a second output stream of preprinted sheets on which no defect is detected.

4,448,122
PRINT WHEELS HAVING MEANS FOR ROTATING A SELECTED PRINT WHEEL AND PREVENTING THE ROTATION OF PRINT WHEELS ADJACENT THE ROTATED PRINT WHEEL

Günter Holland-Letz, Hirschhorn, Fed. Rep. of Germany, assignor to Esselte Pendaflex Corporation, Garden City, N.Y.

Filed Apr. 14, 1982, Ser. No. 368,315
Int. Cl.³ B41L *47/46*
U.S. Cl. 101—91 7 Claims



1. A printing wheel for a rotary printer comprising:

a cylindrical support having a recess longitudinally extending therethrough;

a plurality of print rings positioned adjacent one another on the periphery of said cylindrical support, each said print ring having a plurality of internal teeth disposed along the inner periphery thereof;

an adjusting spindle having a pinion non-rotatably disposed thereon;

means for mounting said spindle and pinion within said recess;

means for axially shifting said spindle in said recess to effect engagement of said pinion with the internal teeth of a selected one of said plurality of print rings to thereby permit rotation of the selected print ring to a desired position;

rotation prevention means for preventing rotation of the print rings adjacent said selected print ring as the selected print ring is being rotated, said rotation prevention means including

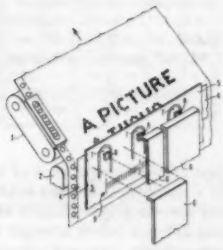
first and second locking members rotatably disposed on said adjusting spindle and respectively associated with the print rings on the opposite sides of the selected print ring, each said locking member including first engaging means for fixedly engaging its associated print ring and a second engaging means for fixedly engaging the recess for locking the associated print rings in place as the selected print ring is rotated, said first and second engaging means respectively fixedly engaging said associated print wheel and said recess in a common plane, said plane being substantially perpendicular to the adjusting spindle.

4,448,123

VARIABLE SPEED PRINTING FOR DOT MATRIX PRINTERS

Arthur E. Fleek, Cary, N.C., and Samuel C. Tseng, Pleasantville, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 30, 1982, Ser. No. 394,054
Int. Cl.³ B41J *3/12, 1/20*
U.S. Cl. 101—93.04 **7 Claims**



1. A dot matrix printing apparatus for printing dots in a pattern along a desired printing line on a recording medium comprising:

a dot font element carrier having a plurality of dot font elements spaced apart from each other by at least a first width measured along said print line;

a plurality of impact hammer means adjacent to said dot font element carrier, and means for actuating said hammer means to produce a mark by one of said dot font elements on said recording medium; and

logic circuit means connected to said hammer actuating means for timing said actuation to impact said carrier when said font elements thereon are adjacent to portions of said printing line where printed dots are desired, the improvement comprising:

means for storing a series of groups of pattern data defining where printed dots are desired along said printing line from a first print position to a second print position;

monitoring means for monitoring the state of the pattern data to be printed in said printing line, said monitoring means comprising a plurality of devices capable of being set into either of two states and means for setting a plurality of said devices to one of said states;

first accessing means for accessing said groups of pattern data sequentially in the order said data is to be printed starting at said first print position;

means for setting one of said devices of said monitoring means to the state opposite said one state for each of said groups of data sensed by said first accessing means;

second accessing means for accessing said groups of pattern data sequentially in the order opposite to the order said data is to be printed starting at said second print position;

means for setting one of said devices of said monitoring means to the state opposite said one state for each of said groups of data sensed by said second accessing means having a second state prior to sensing one group of data having said first state; and

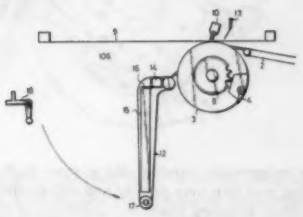
sensing means for sensing when the number of devices of said monitoring means set to the state opposite said one state reaches a reference level.

4,448,124

APPARATUS FOR DISCHARGE OF PRINTED SHEETS FROM A CYLINDER TYPE SCREEN PRINTING MACHINE

Kazuo Nagatani, Seki, Japan, assignor to Sakurai Machine Trading Co., Ltd., Tokyo, Japan

Filed Jun. 24, 1982, Ser. No. 391,551
Claims priority, application Japan, Apr. 1, 1982, 57-47546
Int. Cl.³ B41L *13/00*
U.S. Cl. 101—118 **4 Claims**



1. A paper sheet discharge device in a cylinder type screen printing machine, said device comprising a cylinder for transferring printing sheets towards a discharge table mounted downstream thereof, a screen mounted on top of said cylinder and adapted to travel back and forth in synchronism with forward and reverse rotation of said cylinder, said screen being pressed from above in synchronism with rearward travel of said screen to effect printing a design on printing sheets supplied between said screen and the cylinder, and means for alternately carrying said paper discharge table in a first operative position for receiving printing sheets from said cylinder or in a second non-operative cleaning position with said second position providing easy access to the underside of said screen so as to allow said screen to be cleaned in its mounted position.

4,448,125

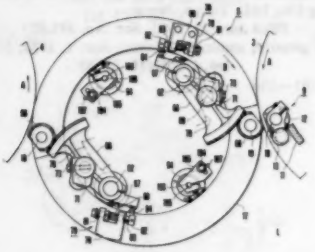
SHEET-FED ROTARY PRINTING MACHINE WITH A TURN-OVER MECHANISM

Shoichi Kawaguchi, and Hiroyuki Sugiyama, both of Toride, Japan, assignors to Komori Printing Machinery Co., Ltd., Tokyo, Japan

Filed Jun. 10, 1983, Ser. No. 503,302
Claims priority, application Japan, Jun. 14, 1982, 57-101885
Int. Cl.³ B41F *5/16*
U.S. Cl. 101—185 **2 Claims**

1. A sheet-fed rotary printing machine with a turn-over mechanism, comprising a pair of adjacent printing units having a pair of blanket cylinders, respectively, a pair of printing cylinders each having a diameter twice that of the blanket cylinders and gripper devices mounted on an outer periphery thereof in diametrically opposite relation, and a turn-over cylinder interposed between and held peripherally against said printing cylinders, said turn-over cylinder having a diameter twice that of the blanket cylinders, said turn-over cylinder having a pair of gripper shafts and a pair of suction lever shafts mounted on an outer periphery thereof in diametrically opposite relation and extending parallel to an axis of the turn-over cylinder, a plurality of turn-over grippers fixed to each of said gripper shafts at intervals, a plurality of gripper pad assemblies loosely fitted on each of said gripper shafts adjacent to said turn-over grippers, respectively, and having sheet gripping surfaces facing ends of said turn-over grippers, a gripper spring

interposed between said turn-over gripper and said gripper pad assembly for resiliently urging them in a direction to grip a sheet therebetween, a turn-over cam mechanism for reciprocably turning said gripper shaft for turning over and turn-over gripper and said gripper pad assembly in unison between a sheet-leading-edge gripping position and a sheet-trailing-edge position, a gripper cam mechanism and a turn-over gripping cam mechanism for reciprocably turning said gripper shaft for opening and closing said turn-over gripper and said gripper pad assembly in both said positions, a sheet releasing mecha-



nism for reciprocably turning said gripper shaft for opening and closing said turn-over gripper and said gripper pad assembly in a sheet releasing position, a plurality of suction levers mounted at intervals on each of said suction lever shafts in alignment with said turn-over grippers and axially staggered relation to the latter, and a suction lever turning cam mechanism for reciprocably turning said suction lever shaft for turning said suction lever between a position in which said gripper pad assembly is limited against angular movement and a position in which a sheet trailing edge is attracted.

4,448,126

INKER FOR PRINTING PRESSES

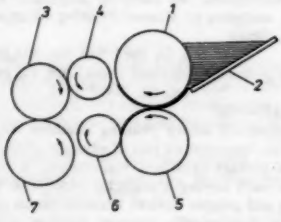
Daniel Bognar, Wiesbaden, and Friedrich Kuhnert, Heusenstamm, both of Fed. Rep. of Germany, assignors to Miller-Johannisberg Druckmaschinen GmbH, Wiesbaden, Fed. Rep. of Germany

Filed Mar. 16, 1983, Ser. No. 475,759

Claims priority, application Fed. Rep. of Germany, May 26, 1982, 3219655

Int. Cl.³ B41F *31/14*

U.S. Cl. 101—363 **13 Claims**



1. In an inking train for a printing press wherein a serial plurality of rotatable rollers cooperate to transport ink from an ink fountain through the inking train for repetitive printing of inked impressions upon a printing medium, the combination comprising; an ink transporting roller which receives an ink output from such ink fountain; an ink splitting cylinder which contacts said ink transporting roller to acquire therefrom a first portion of such ink output while a second portion of such ink output remains on a surface portion of said ink transporting roller; a first ink ductor roller intermittently engageable with said ink splitting cylinder to intermittently acquire therefrom an ink load comprising substantially all of said first portion of such ink output; a second ink ductor roller intermittently engageable with said surface portion of said ink transporting roller to intermittently acquire therefrom an ink load comprising substantially all of said second portion of such ink output; and subsequent roller means cooperable with said first and second ductor rollers to recombine their respective ink loads upon a common ink transporting roller for further transport of such entire ink output through such inking train.

4,448,127

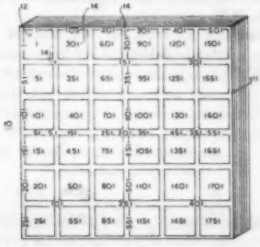
METHOD OF PRODUCING STACKS OF TICKET STACKS

John J. Frain, 400 Island Way, Clearwater, Fla. 33515

Filed May 28, 1982, Ser. No. 382,950

Int. Cl.³ B41F *13/54*

U.S. Cl. 101—426 **9 Claims**



1. The method of producing a stack of ticket sets each of which contains a plurality of different tickets comprising the steps of printing and stacking a plurality of rectangular first sheets containing different tickets arranged in similar patterns of mutually perpendicular rows and columns each having a factorable number of tickets to form a first stack, cutting said first stack along one or a plurality of parallel first cut lines to produce similar first substacks, stacking said first substacks to form a second stack, cutting said second stack along one or a plurality of parallel second cut lines perpendicular to said first cut lines to produce second substacks of different ticket sets and stacking said second substacks to produce a third stack of said ticket sets, said ticket sets being mutually different.

4,448,128

HOLLOW EXPLOSIVE BODY

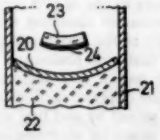
Walter Trinks, Bergstrasse 71, D-5340 Bad Honnef, and Kurt-Albrecht Köhler, Geislarstrasse 86, D-5300 Bonn 3, Fed. Rep. of Germany

Division of Ser. No. 74,550, Sep. 11, 1979. This application Jul. 27, 1982, Ser. No. 408,262

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1978, 2841056

Int. Cl.³ F42B *11/22*

U.S. Cl. 102—476 **1 Claim**



1. A hollow explosive projectile for penetrating an armored target, comprising

(a) a hollow cylindrical jacket (**21**) formed of resilient material and closed at one end;

(b) a body of explosive material (22) arranged within said jacket, said body of explosive material containing an axial recess;

(c) a generally circular concave lining plate (20) arranged within said recess and in contact with said jacket extending continuously across the interior of said jacket, one surface of said plate being in contiguous engagement with said body of explosive material, thereby to enclose said body of explosive material;

(d) an auxiliary charge support plate (24) having a concave configuration corresponding with said lining plate;

(e) means for mounting said support plate in parallel spaced relation from said lining plate; and

(f) a body of auxiliary explosive charge material (23) arranged in contiguous relation with the remote surface of said support plate relative to said lining plate, whereby upon ignition of said auxiliary explosive charge material, said support plate is operable to expand said lining plate and said cylindrical jacket radially outwardly, and upon subsequent ignition of said body of explosive material the projectile penetrates the armored target.

4,448,129

TELESCOPIC PROJECTILE

André J. Gabriels, Genk, Belgium, assignor to Fabrique Nationale Herstal, Belgium

Filed Nov. 20, 1980, Ser. No. 208,809

Claims priority, application Belgium, Nov. 30, 1979, 2/58240; Oct. 10, 1980, 2/58794

Int. Cl.³ F42B *27/00*

U.S. Cl. 102—487 **16 Claims**

1. A projectile having a head and a tubular tail, the projectile containing an explosive charge and a firing chain therefor, the tail comprising first and second telescopically related tubular parts, said first telescopic part is fixed to said head and includes a first part of said firing chain, said second telescopic tubular part includes the remaining parts of the firing chain, and interengaging guiding means on said first and second telescopically related tubular parts to relatively rotate said first and second tubular parts in response to relative longitudinal telescopic movement of said first and second telescopically related parts to bring said first part of said firing chain into radial and functional alignment with said remaining parts of the firing chain.

4,448,130

PACKAGING KIT FOR PYROTECHNIC MATERIALS LOADING

Spencer J. Speer, Ontario, Calif., assignor to General Dynamics, Pomona Division, Pomona, Calif.

Filed Jul. 15, 1982, Ser. No. 398,724

Int. Cl.³ F42B *13/20*

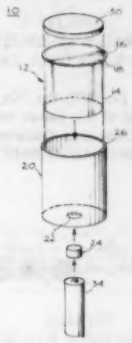
U.S. Cl. 102—498 **17 Claims**

1. A packaging kit for pyrotechnic materials which comprises:

a preformed cup of generally cylindrical configuration, closed at the bottom and open at the top, having a radially outwardly projecting lip extending about the open end;

a sheet-like cover for hermetically sealing the cup by attachment about the periphery of the cover to the cup lip after the cup is filled to a preselected bulk density with pyrotechnic materials;

a cup-like casing of configuration and dimension selected to receive the preformed cup therein with minimal spacing between the inner surface of the casing wall and the outer wall surface of the cup, said casing being of substantially rigid construction for protecting the cup and its contents against deformation or rupture from forces normally encountered in the handling of the cup and casing combination, the casing being longer than the cup by a predetermined dimension with a selected spacing between the bottom of the cup and the bottom of the casing being maintained by virtue of the lip of the cup engaging the upper end of the casing;



a casing plug for insertion in the open end of the casing to push the cup a predetermined distance into the casing and to retain the cup in said position within the casing by crimping of the cup lip and outer cover portion between the plug and the casing; and

means defining an opening in the bottom of the casing for receiving an igniter in a position adjacent to but spaced from the bottom of the cup within the casing.

4,448,131

SUSPENSION SYSTEM FOR RAIL VEHICLES

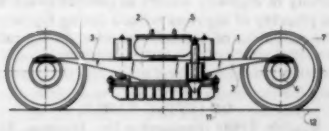
Emil Weiland, Hohenbrunn, and Christian Günther, Haar, both of Fed. Rep. of Germany, assignors to Messerschmitt-Bölkow Blohm Gesellschaft mit beschrankter Haftung, Munich, Fed. Rep. of Germany

Filed Dec. 22, 1980, Ser. No. 218,693

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1979, 2952182

Int. Cl.³ B61F *5/52*

U.S. Cl. 105—182 R **5 Claims**



1. A bogie for a rail vehicle comprising at least two wheel sets each consisting of an axle and a plurality of wheels and a bogie frame joining said wheel sets together in operative relationship, said bogie frame being formed with an H-shaped configuration consisting of a cross member and arm members extending therefrom, said arm members having attached at the ends thereof said wheel set axles, said bogie frame operating to provide the primary spring suspension means acting between said wheel set axles and said cross member to effect vertically resilient suspension of respective wheel set axles relative to said cross member, said bogie frame being constructed with said cross member and said arm members made completely of fiber-reinforced material joined together to form said bogie frame as a unitary member, with said cross member having a relatively rigid structure and with said arm members being formed with a more resilient structure taken relative to said

cross member; said arm members being formed as integral units of fiber-reinforced material which function as said primary spring suspension means of said bogie; said fiber-reinforced structure of said bogie frame thereby functioning simultaneously as a frame member supporting said wheel sets maintaining them in guided relationship relative to each other and as the primary spring suspension means of said bogie.

4,448,132

CONVERTIBLE RAILWAY-HIGHWAY VEHICLE

William T. Beatty, Rte. 2, Box 169-A, Tara Dr., Oakwood, Ga. 30566

Filed Sep. 17, 1981, Ser. No. 303,157
The portion of the term of this patent subsequent to Dec. 21, 1999, has been disclaimed.
Int. Cl.[3] **B60F** *1/00;* **B61D** *15/00;* **B61F** *13/00;* **B62D** *61/12*
U.S. Cl. 105—215 C **6 Claims**

1. A convertible highway-railway vehicle with one end adapted to be removably and alternatively coupled to a railway truck for railway use and a highway truck tractor for highway use, said vehicle including:

an elongate frame having opposed ends, said frame removably and alternatively coupled to the railway truck and the highway truck tractor adjacent one of said ends;

a convertible truck assembly operatively connected to said frame adjacent the other of said ends, said truck assembly including a plurality of railway wheels and a first plurality of highway wheels, said truck assembly adapted to lower said railway wheels into operative position for railway use while raising said highway wheels out of operative position and to lower said highway wheels into operative position for highway use while raising said railway wheels out of operative position; and

a plurality of liftable highway axle assemblies operatively connected to said frame intermediate the ends thereof and including a second plurality of highway wheels adapted to be lowered into operative position during highway use so that the vehicle is supported by both said first and second plurality of highway wheels to prevent overloading said first plurality of highway wheels during highway use and to be raised out of operative position during railway use.

4,448,133

DRAFTING TABLE

Paul G. Randall, 11902 Binghamton Dr., Houston, Tex. 77089

Filed Mar. 30, 1981, Ser. No. 248,946
Int. Cl.[3] **A47F** *5/12*
U.S. Cl. 108—9 **7 Claims**

1. A foldable drafting table comprising:

(a) front member,

(b) two first side members, rigidly attached to and spaced apart by said front member,

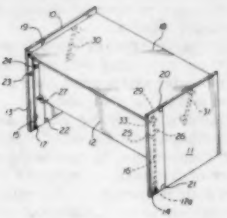
(c) two opposed slots, one in each of said first side members, forward of said front member, and extending above said front member,

(d) two second side members, one each hingedly attached to each of said first side members and extendable rearward from said front member, and foldable toward said front member,

(e) a drafting top for extension between said first and second side members,

(f) pin means attached to said drafting top at one end thereof to seat in said slots for movement of said drafting top along said slots into a position forward of said front member and between said two first side members for storage, and

(g) means for releasably attaching said drafting top between and to said second side members and for adjusting the



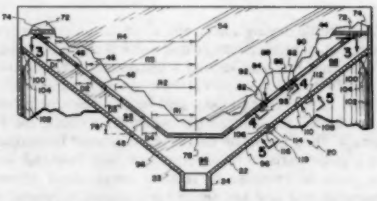
slope of said drafting top, by pivoting said drafting top about said pin means, each of said slots being provided at the upper end thereof with an offset in which to rest said pins attached to said top when said top is in an open configuration for use.

4,448,134

UNIFORM DISPENSING OF GRANULAR MATERIAL FROM A VESSEL

Jerry B. Foote, Spokane, Wash., assignor to Energy Products of Idaho, Coeur d'Alene, Id.

Continuation-in-part of Ser. No. 170,429, Jul. 21, 1980, abandoned, Division of Ser. No. 57,479, Jul. 13, 1979, Pat. No. 4,253,824. This application Sep. 7, 1982, Ser. No. 415,112
Int. Cl.[3] **F23G** *5/00, 7/00*
U.S. Cl. 110—245 **13 Claims**



1. A method of removing granular material from a fluidized bed vessel comprising the steps of:

causing air to be selectively displaced upwardly through a fluidized bed of substantially homogeneous granular material within the vessel;

elevating the temperature of the fluidized bed granular material;

causing combustible material to be burned within the fluidized bed thereby causing tramp material to be present in the fluidized bed;

gravity displacing the hot granular bed material and hot tramp material downwardly in a vessel passed the air displacement site;

insuring a substantially uniform rate of descent across the entire cross section of the vessel of the hot bed and tramp material as combustion continues in the bed by: interposed apertured downwardly converging funnel shaped means in the path of the granular material at the bottom of the vessel, the funnel means substantially spanning the entire cross section of the vessel but entirely closed at the lower end whereby the granular bed and the tramp materials are caused to substantially uniformly pass through the apertures of the apertured funnel means, either directly or after being deflected along the funnel means between adjacent apertures; causing the passsed granular bed and

tramp materials to engage a substantially solid downwardly converging funnel means at a fixed permanent distance below and juxtaposed the apertured funnel means whereby the granular bed and tramp materials move between the two funnel means as a generally cone-shaped layer in an hour-glass fashion; and discharging the granular bed and tramp materials through a port at a central location comprising the low point of the solid downwardly converging funnel means.

4,448,135

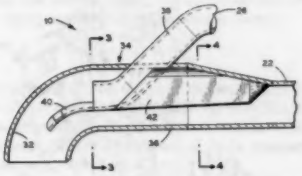
INLINE AIR-COAL SEPARATOR

Donald R. Dougan, North Canton; Albert D. La Rue, Uniontown, both of Ohio, and John J. Wolf, Upper Darby, Pa., assignors to The Babcock & Wilcox Company, New Orleans, La.

Continuation of Ser. No. 321,011, Nov. 16, 1981, abandoned. This application Jun. 7, 1983, Ser. No. 500,016

Int. Cl.³ F23D *1/00*

U.S. Cl. 110—263 **1 Claim**



1. In combination with a boundary wall of a furnace, a burner wall spaced from the boundary wall to form a windbox therebetween, the boundary wall having first and second ports extending therethrough, the first port being disposed subjacent to the second port, and the windbox communicating with the first port to deliver combustion air thereto, an improved pulverized fuel burner comprising first and second nozzles, the first nozzle being formed of a horizontally-oriented segment defining an outlet, an elbow defining an inlet, and a fairing connection the elbow to the segment, the second nozzle being formed of an upwardly-oriented segment having upper and lower curved end-portions, and a horizontally-oriented segment connected to the upper portion and defining an outlet, the lower portion being disposed within the first nozzle and defining an inlet concentrically spaced with relation to the elbow, an arcuate deflector connected to a lower section of the inlet of the second nozzle, the deflector projecting into the elbow to promote flow of a lean fuel-air mixture through the second nozzle and a rich fuel-air mixture through said first nozzle.

4,448,136

BOILER WITH WASTE HEAT RECOVERY

Martin White, Kingston upon Thames, England, assignor to British Gas Corporation, London, England

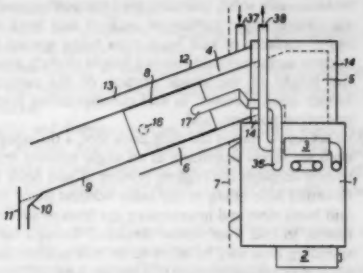
Filed Jul. 6, 1982, Ser. No. 395,267

Claims priority, application United Kingdom, Aug. 4, 1981, 8123819

Int. Cl.³ F22B *1/18*; F22D *1/00*

U.S. Cl. 122—17 **1 Claim**

1. A fuel fired boiler for heating circulating water, the boiler comprising a housing, a burner and a primary heat exchanger disposed in said housing, a flue extending from the upper end of said housing, a secondary heat exchanger disposed within said flue, a fluid circulating system including piping for circulating fluid through said secondary heat exchanger to said primary heat exchanger, an outlet comprising a discharge spout for said flue for discharging externally of the housing any flue gas condensate formed in the secondary heat exchanger during use, the outlet being disposed in relation to the secondary heat exchanger so as to receive condensate from said secondary heat exchanger by gravity flow and being disposed at the outer end of the flue portion lying external of the housing, an air intake duct forming a shroud for at least a portion of said flue external of said boiler housing, and a passageway within



said housing for delivering air from said air intake duct to said burner whereby air passing through said air intake duct is preheated by the flue gas prior to delivery to the burner.

4,448,137

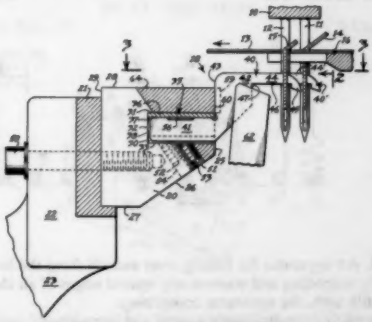
MODULAR HOOK BAR WITH GAUGE INSERT FOR TUFTING MACHINE

Kenneth C. Curtis, and John C. Densmore, both of Dalton, Ga., assignors to Tuftco Corporation, Chattanooga, Tenn.

Filed Jan. 26, 1983, Ser. No. 447,974

Int. Cl.³ D05C *15/00*

U.S. Cl. 112—79 R **7 Claims**



1. A looper apparatus for a multiple-needle tufting machine including looper hooks, each hook comprising a neck portion having an upright rear shoulder, a shank portion projecting rearward from the neck portion, and a bill projecting forward from the neck portion, comprising:

(a) a hook bar of solid material having a front face, a rear face, a bottom surface, and a transverse dimension,

(b) an elongated recess opening through the front face of said hook bar, projecting rearward into said hook bar, and extending transversely of said hook bar,

(c) said recess having a top surface and a bottom surface,

(d) an elongated unitary gauge member having front, rear, upper and lower portions, and received within said recess, the longitudinal axis of said gauge member extending transversely of said recess,

(e) a plurality of transversely spaced hook slots in said gauge member having the same gauge as the needles in the multiple-needle tufting machine,

(f) said hook slots being disposed vertically and extending front-to-rear through said gauge member and opening through the front and lower portions of said gauge member, each of said hook slots being adapted to receive the

shank portion of a corresponding looper hook projecting rearwardly into said recess,

(g) said gauge member comprising an elongated continuously extending transverse top wall portion having a continuously solid, uninterrupted top surface and defining the closed upper surface of each of said hook slots, the upper surfaces of said hook slots being spaced from the bottom surface of said recess a height slightly greater than the height of the shank portion of the corresponding looper hook received in said corresponding hook slot in operative position; and

(h) a set screw means for each hook slot, a threaded hole for each set screw extending at an angle upward from front-to-rear through the bottom portion of said hook bar, each threaded hole being in the same vertical plane as each of said hook slots and intercepting the bottom surface of said recess, so that a set screw threaded through each corresponding hole may be adjusted to bear against the bottom edge of the shank portion of a looper hook in the operative position for holding the top edge of the shank portion against the top surface of the corresponding hook slot within said guage member.

4,448,138

MACHINE FOR CONTINUOUSLY FOLDING OVER AND STITCHING WEB EDGES

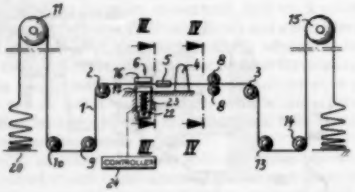
Johannes Freermann, Ochtrup, Fed. Rep. of Germany, assignor to Carl Schmale KG, Ochtrup, Fed. Rep. of Germany

Filed Jun. 24, 1983, Ser. No. 507,868

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1982, 3227196

Int. Cl.³ D05B *35/00*

U.S. Cl. 112—147 **14 Claims**



1. An apparatus for folding over and stitching the longitudinally extending and transversely spaced edges of an elongated textile web, the apparatus comprising:

a pair of longitudinally spaced and transversely throughgoing main rolls rotatable about respective parallel axes;

guide and drive means for passing the web longitudinally and continuously from one of the main rolls to the other main roll in a travel direction perpendicular to the roll axes and with the web spanned tightly longitudinally between the main rolls and lying generally in a plane with its edges generally parallel;

means including respective stretchers transversely confronting each other between the main rolls and engaging the web edges for urging same transversely apart and thereby transversely stretching the web;

means between the stretchers and the downstream main roll for folding over the edges of the web; and

sewing means between the folding means and the downstream main roll for stitching together for folded-over web edges.

9. A method of selvedging the longitudinally extending and transversely spaced edges of an elongated textile web, the method comprising the steps of:

passing the web longitudinally and continuously from a transversely throughgoing upstream main roll to a transversely throughgoing downstream main roll in a travel direction perpendicular to the rolls and with the web spanned tightly longitudinally between the main rolls and lying generally in a plane with its edges generally parallel;

engaging the web edges at a stretching location between the main rolls to urge the edges transversely apart and transversely stretch the web;

folding over the edges of the web between the stretching location and the downstream roll; and

stitching together the folded-over web edges upstream of the downstream main roll.

4,448,139

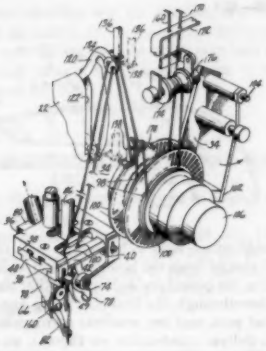
AUTOMATIC THREAD CHANGING SEWING MACHINE

Adolph S. Dorosz, Beverly, Mass., assignor to USM Corporation, Farmington, Conn.

Filed Oct. 27, 1981, Ser. No. 315,415

Int. Cl.³ F23G *5/04*

U.S. Cl. 112—221 **17 Claims**



1. A sewing machine having a plurality of reciprocably movable spaced apart shuttlable needles to permit the stitching of several different kinds of threads, said sewing machine comprising:

a shuttle means wherein a first needle and a second needle may be moved, one from an active sewing position transversely to an inactive standby position, the other from an inactive standby position transversely to the active position, said shuttle means including an indexer which moves said first and second needles simultaneously;

and

an indexing cylinder, attached to said indexer through a linkage, which when actuated, effectuates the shuttle of said needles;

said needles being each supported by a needle holder, said needle holders being reciprocably supported in said indexer, said indexer being transversely supported in a needle holder cage, wherein a biased detent means is arranged between said needle holder cage and said needle holders to facilitate alignment and proper location of said needles in the inactive positions.

4,448,140

RECESSED TOP FEED FOR SEWING MACHINES

Robert E. Porter, 18 Tally Ho Dr., Hamilton, Mass. 01936

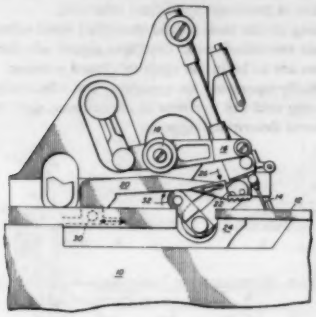
Filed Oct. 5, 1982, Ser. No. 432,810

Int. Cl.³ D05B *27/04*

U.S. Cl. 112—311 **3 Claims**

1. In a sewing machine having a source of drive, a top feed for material to be sewn and a work area over which said material passes, a horizontal drive system for said top feed which comprises a bed plate disposed beneath said work area, and having openings formed in a surface thereof, slide members

disposed in said openings, means connecting said slide members to said source of power to cause reciprocation thereof in



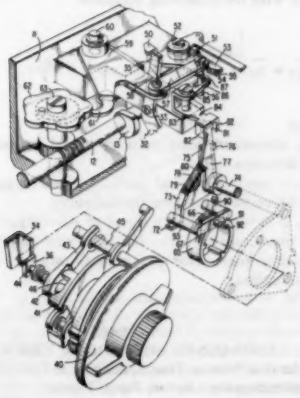
said openings and means connecting said slide members to said top feed to apply material feeding motion thereto.

4,448,141

SEWING MACHINE CAM CONTROLLED FEED ENGAGING AND DISENGAGING MECHANISM

Jan Szostak, Lincroft; Henry Schaeflern, Pittstown, and Walter H. W. Marsh, Scotch Plains, all of N.J., assignors to The Singer Company, Stamford, Conn.

Filed Jul. 15, 1983, Ser. No. 514,136
Int. Cl.³ D05B *27/22*
U.S. Cl. 112—315 **3 Claims**



1. In a sewing machine having a frame, a work feed regulator shiftably supported in said frame the position of which dictates the magnitude and direction of work feed,

an operator influenced control member shiftably supported in said frame and having an operative connection with said work feed regulator effective to locate said work feed regulator in position dictating any selected magnitude and direction of feed,

said operative connection between said operator influenced control member and said work feed regulator including means for providing a dwell segment of control member movement in which the position of said work feed regulator dictated by said operator influenced control member remains in maximum magnitude and forward direction of feed,

a feed advance pattern cam carried by said sewing machine frame and driven by said sewing machine,

a feed advance cam tracking mechanism carried by said sewing machine frame,

connection means selectably engageable or disengageable between said feed advance cam tracking mechanism and said work feed regulator,

and means for positively engaging and disengaging said connection means comprising:

cam means carried by said operator influenced control member and including separate engaging and disengaging cam surfaces,

engaging and disengaging cam follower means supported on said sewing machine frame and arranged for positive influence by said engaging and disengaging cam surfaces respectively during said dwell segment of control member movement,

said engaging cam follower means being operatively coupled to said connection means, and

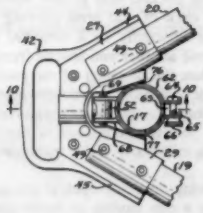
said disengaging cam follower means being operatively coupled to said engaging cam follower means.

4,448,142

BOOM ASSEMBLY FOR SAILBOARD

Jerry B. Pollard, Woodinville, Wash., assignor to The Coleman Company, Inc., Wichita, Kans.

Filed Nov. 2, 1981, Ser. No. 316,782
Int. Cl.³ B63B *15/00*
U.S. Cl. 114—39 **3 Claims**

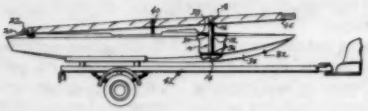


1. In a sailboard assembly having a board adapted to support a user on water, a mast connected to the board, and a sail supported by the mast, an improved boom assembly comprising a boom support bracket having a pair of mast-engaging surfaces, at least one boom connected to the boom bracket, and an elastic connecting member mounted on the boom bracket between the mast-engaging surfaces and extending toward the mast for pivotally connecting the boom bracket to the mast, the connecting member including a first end which is pivotally connected to the mast for pivoting movement about a first axis which extends perpendicularly to the axis of the mast and a second end which is pivotally connected to the boom bracket for pivoting movement about a second axis which extends perpendicularly to said first axis, the boom bracket being pivotable with respect to the mast between a use position in which the boom extends generally perpendicularly to the mast and the mast-engaging surfaces engage the mast and frictionally retain the boom bracket in the use position and a storage position in which the boom extends at less than 90° with respect to the mast, the elastic connecting member being tensioned with the boom bracket is in the use position to provide a frictional retention force between the mast-engaging surfaces and the mast.

4,448,143
SAIL CRADLE

Richard J. Welsh, 460 NE. 105 St., Miami Shores, Fla. 33138

Continuation-in-part of Ser. No. 119,387, Feb. 7, 1980, abandoned. This application Jan. 27, 1982, Ser. No. 343,100
Int. Cl.³ B63B *15/00*
U.S. Cl. 114—90 1 Claim



1. In combination, a sailboat of the type sized to be transported on a trailer behind a vehicle, said sailboat having a removable mast having an upper end and a lower end, a deck with a hole sized to receive the lower end of the mast in upstanding relation when in use in the water, said deck being above the hull a predetermined first distance, a boom having a first end zone adapted to engage the mast when in use and a sail to be supported by the mast and the boom, said mast and boom being adapted to be positioned in parallel relation when not in use and said sail being adapted to be furled about said mast to provide a generally tubular package,

a tubular stem of predetermined length and diameter, said length being greater than the first predetermined distance, said tubular stem having a bottom end, said bottom end being of a diameter sized to fit within the hole in the deck and to dwell upon the hull bottom after removal of the mast, an upper end zone on said stem, said upper end zone being at all times above the deck when said bottom end is in engagement with the hull bottom, said upper end zone comprising a cradle defining a generally C-shaped upwardly opening pocket, said pocket having a starboard and port arm, each of said arms curving from the stem outwardly and upwardly to a terminal end in spaced relation from one another and spaced from one another a distance less than the diameter of the package, said arms being of flexible yieldable material for resiliently opening to nest the package therein in snug relation for captivating receipt of the package composed of the boom, sail and mast when the sailboat is to be transported by a trailer over land,

said lower end being normally open in use on land and said stem including a cap having an outer end surface of a diameter substantially equal to the diameter of the stem and an inwardly projecting portion of smaller diameter sized to engage the interior of the tubular stem defining a shoulder for close snug abutting relation to close the end of the stem.

4,448,144
METHOD FOR OPENING, CLOSING AND ROTATING RIGID MARINE SAIL

Akira Senoo, Yokosuka; Yuzo Nezu, Zama; Masanori Ito, Tokyo; Hironobu Nagano, and Tatsuo Aire, both of Yokohama, all of Japan, assignors to Japan Marine Machinery Development Association, Tokyo; Aitoku Company Limited, Yamaguchi and Nippon Kokan Kabushiki Kaisha, Tokyo, all of, Japan

Filed Jul. 7, 1981, Ser. No. 281,164
Claims priority, application Japan, Jul. 21, 1980, 55-98687
Int. Cl.³ B63B *49/00*; B63H *9/06*; G05B *7/02*
U.S. Cl. 114—102 2 Claims

1. A method of selectively opening or closing, and rotating a generally rigid marine sail, the sail comprising at least first and second sail portions selectively pivotably movable between an open position and a closed position about a substantially vertical axis associated with a mast of a ship, and said mast being rotatable about its own axis;

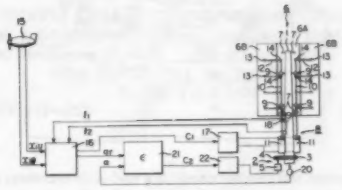
the method comprising:

smoothing a plurality of signals representative of the wind velocity at predetermined time intervals;

smoothing a plurality of signals representative of the wind direction at predetermined time intervals;

determining on the basis of said smoothed wind velocity signal and said smoothed wind direction signal whether said sail portions are to be in the open or closed position;

automatically operating an apparatus for selectively opening or closing said sail portions in accordance with said aforementioned determinating step;



determining an optimum sail angle, relative to the ship, at which said sail portions provide maximum propulsive effect when in said open position and minimum wind resistance when in said closed position; and

rotating said mast together with said sail portions in accordance with any deviation between the actual sail angle and said determined optimum sail angle to thereby tend always to maintain said sail portions at said optimum sail angle;

either or both of said plurality of wind velocity signals and said plurality of wind direction signals being smoothed in accordance with the following equation:

$$\overline{\chi}_n = \overline{\chi}_{n-1} + (\chi_n - \overline{\chi}_{n-1}) \exp\left(-\frac{\Delta t}{T}\right)$$

where

$\overline{\chi}_n$: smoothed wind velocity signal or smoothed wind direction signal,

$\overline{\chi}_{n-1}$: smoothed wind velocity signal or smoothed wind direction signal directly before $\overline{\chi}_n$,

χ_n: n-th wind velocity signal or wind direction signal,

T: time constant under the first order lag; and

Δt: time interval for measuring the wind velocity or wind direction.

4,448,145
UNMANNED SUBMARINE VEHICLE

René Hervieu, Nantes, France, assignor to Centre National pour l'Exploitation des Oceans, Paris, France

Continuation of Ser. No. 212,314, Dec. 2, 1980, abandoned, which is a continuation of Ser. No. 902,230, May 2, 1978, abandoned. This application Sep. 30, 1982, Ser. No. 433,050
Claims priority, application France, May 4, 1977, 77 14154
Int. Cl.³ B63G *8/00, 8/14*
U.S. Cl. 114—312 14 Claims

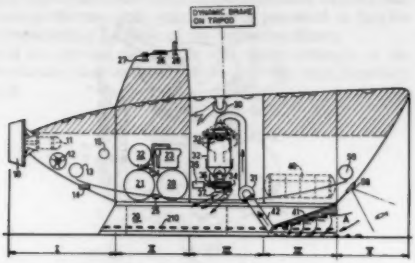
1. A submarine vehicle capable of operating at extremely great depths and of gathering materials from the ocean, comprising:

(a) loading means for said materials including an exchanger-container having a vertical axis of symmetry coinciding with a line passing through the center of gravity and center of volume of said vehicle;

(b) said exchanger-container having a moveable wall, dividing the interior thereof into a first compartment containing ballast and means for unloading the ballast, and a second compartment for receiving said materials; and

(c) wherein said ballast unloading means is adapted to oper-

ate to unload ballast while materials are being received in said second compartment, whereby the apparent weight



of the vehicle is maintained approximately constant during a material loading operation.

4,448,146

RUDDER WITH A STABILIZER FIN

Willi Becker, Hamburg, Fed. Rep. of Germany, assignor to Willi Becker Ingenieurbüro GmbH, Hamburg, Fed. Rep. of Germany

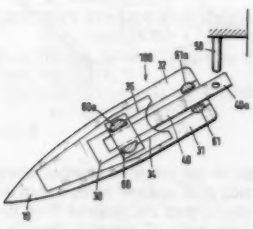
PCT No. PCT/DE81/00182, 371 Date Feb. 11, 1982, 102(e) Date Feb. 11, 1982, PCT Pub. No. WO82/01527, PCT Pub. Date May 13, 1982

PCT Filed Oct. 29, 1981, Ser. No. 349,082

Claims priority, application Fed. Rep. of Germany, Oct. 30, 1980, 3040808

Int. Cl.³ B63H *25/06*

U.S. Cl. 114—162 **11 Claims**



1. A rudder for ocean going ships comprising an upwardly extending main rudder (20), an upwardly extending stabilizer fin (10) hinged to said main rudder and forcibly guided by said main rudder, a swivel drive articulation (100) connected to the upper end of said stabilizer fin (10), said drive articulation (100) comprises a slide bearing (30) located at the upper end of said fin and extending transversely of the upward direction, an elongated drive rod (40) positioned in said slide bearing with one end of said drive rod located within said slide bearing and the other end thereof extending out of said slide bearing, hinging bolt (50) arranged to be fixed to a ships's hull and extending in the upward direction, the end of said drive rod (40) extending out of said slide bearing is pivotally mounted on said hinging bolt, said slide bearing (30) has a forked configuration and includes a pair of fork arms (31, 32) disposed in laterally spaced relation with said drive rod (40) located therebetween and said fork arms extend transversely of the upward direction, each of said fork arms has a wall surface (34,35) facing the other said wall surface with said drive rod (40) located between said wall surfaces, at least one recess (36) formed in each of said wall surfaces (35,36) open toward said drive rod (40), said recess (36) being open in the upward direction, a replaceable guide block (60,60*a*,61,61*a*) formed of plastic and inserted in said open recess so that said guide block projects inwardly from said wall surface toward said drive rod, and means located at the upper end of said recesses (36) for blocking unintentional removal of said guide blocks from said recesses.

4,448,147

TEMPERATURE RESPONSIVE WARNING DEVICE

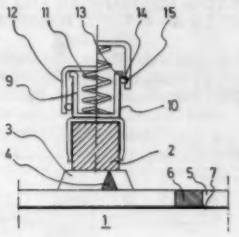
Gabriël Dewaegheneire, Deerlijk, Belgium, assignor to Leuven Research & Development, Leuven, Belgium

Filed Jun. 8, 1981, Ser. No. 271,173

Claims priority, application Netherlands, Jun. 9, 1980, 8003358

Int. Cl.³ G01K *1/16, 5/70*

U.S. Cl. 116—216 **10 Claims**



1. A warning device in heat conducting contact with a current conductor comprising means fixing the device to the conductor, at least two concentric tubular members in telescoping relationship with each other and having outer surfaces with different and contrasting appearances, a spring element with shape memory properties that is activated at a predetermined temperature, opposite sides of the spring element being in contact with inner surfaces of each tubular member whereby one of the tubular members will extend relative to the other to signal when said predetermined temperature has been reached.

4,448,148

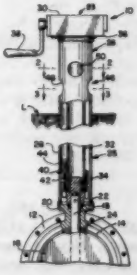
POST INDICATING VALVE ASSEMBLY INDICATOR

Lorand H. Gain, Jr., Montgomery, Ill., assignor to Amsted Industries Incorporated, Chicago, Ill.

Filed May 3, 1982, Ser. No. 373,876

Int. Cl.³ F16K *37/00*

U.S. Cl. 116—277 **2 Claims**



1. An indicator for a valve permitting observation of a valve position in the closed or open position thereof comprising a post connected for movement with a shaft for moving the valve between its open and closed position, a fixed housing coaxially disposed about said shaft, said housing including a first pair of diametrically opposed openings, and a second pair of diametrically opposed openings vertically spaced from said first pair of openings, color indicia means on said post fixed to said shaft and viewable through said openings, said indicia

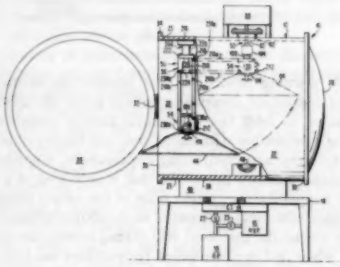
means when viewed through either of said openings in said first and second rows indicating simultaneously the closed or open position of said positions of said valve, wherein said indicia means includes a first row of two alternately arranged colors of which one color designates the open position and the other color the closed position of said valve, and a second row of the same two colors alternately arranged in staggered relation to said first row of colors, whereby the same colors are simultaneously visible through said openings in either the closed or open position of said valve.

4,448,149

APPARATUS FOR REMOVABLY MOUNTING AND SUPPLYING MECHANICAL AND ELECTRICAL ENERGY TO A VACUUM CHAMBER SUBSTRATE HOLDER

William W. Brown, Jr., Milton; Gerhard P. Dahlke, Fishkill, and Francis T. Lupal, LaGrangeville, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 12, 1982, Ser. No. 433,590
Int. Cl.³ C23C *13/08*
U.S. Cl. 118—500 **11 Claims**



1. Apparatus for removably mounting and coupling mechanical and electrical energy to a multiposition holder in a vacuum chamber, the holder for retaining substrates in the chamber during substrate processing, the apparatus comprising:

a feedthrough mounted on the chamber for transmitting electrical and mechanical energy from outside the chamber to inside the chamber;

a coupler for releasably engaging the feedthrough and the holder for supplying electrical and mechanical energy from the feedthrough to the holder; and

a linkage assembly mounted within the chamber and connected to the coupler for locating the coupler in a first position at which the holder may be mounted to the coupler and in a second position at which the coupler may be connected to the feedthrough so that electrical and mechanical energy may be supplied to the holder during processing of the substrates.

4,448,150

ANIMAL HOUSING AND ACTIVITY MONITOR

Nicholas Catsimpoolas, Newton Center, Mass., assignor to Trustees of Boston University, Boston, Mass.

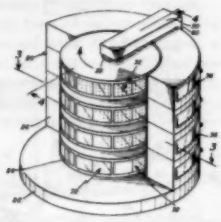
Filed Sep. 15, 1982, Ser. No. 418,555
Int. Cl.³ A01K *1/03, 45/00*
U.S. Cl. 119—1 **24 Claims**

1. Animal housing and activity monitor comprising:

a. a cage assembly of at least two levels of vertically displaced animal cages, each level comprising a plurality of cages angularly displaced;

b. a central column-like core having a central axis, mounted for rotation relative to the cage assembly, the core carrying electromagnetic communicating means;

c. means responsive to the electromagnetic communicating means for providing at least one beam through seqential cages within each level; and,



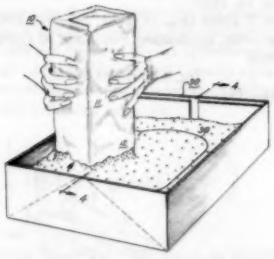
d. detecting means for receiving said beams for providing indications of the animals's position through the electromagnetic communicating means.

4,448,151

CAT BOX FILLER SYSTEM AND METHOD

Henry E. Lowe, 21725 Allegheny St., Cassopolis, Mich. 49031

Filed Mar. 20, 1980, Ser. No. 132,285
Int. Cl.³ A01K *1/015*
U.S. Cl. 119—1 **16 Claims**



1. A package of cat box filler material, comprising a container having side walls and end walls, one of said walls being openable for discharging the material from the container, a first layer of litter material disposed adjacent said openable wall, a second layer of litter material with an odor suppressant mixed throughout in any amount substantially greater than any odor suppressant in said first layer, disposed in spaced relation to said openable wall with said first layer being disposed between said second layer and said openable wall so that when the two layers of litter are emptied from the container through the openable wall with the opened wall facing downwardly, two layers of litter are formed in the cat box with said second layer forming the top layer in the box.

4,448,152

APPARATUS FOR REARING SMALL ANIMALS

Motohiro Niki, 22-11, Yushima 2-Chome, Bunkyo-Ku, Tokyo-To, Japan

Filed Sep. 7, 1982, Ser. No. 415,191
Claims priority, application Japan, Jun. 4, 1982, 57-94886
Int. Cl.³ A01K *31/04*
U.S. Cl. 119—22 **5 Claims**

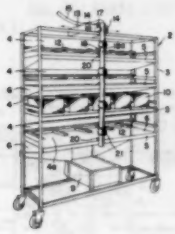
1. An apparatus for rearing small animals comprising:

a main structure having elongated rearing spaces for small animals, said spaces being disposed one above another and having respective elongated floors each so inclined transversely thereof that one longitudinal side thereof is higher than the other longitudinal side;

a nozzle unit disposed on the same side of the main structure

as said one longitudinal side, said nozzle unit having a plurality of nozzles arranged to eject cleaning water onto said one longitudinal sides of the respective floors transversely thereto, said nozzles being provided at heights corresponding to those of the respective floors;

means for moving the nozzle unit reciprocatingly in the horizontal direction along said side of the main structure; and



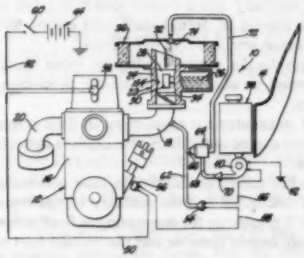
filth scraping strip blades placed flat on and in close contact with the upper surfaces of the respective floors and extending transversely thereto, each of the filth scraping blades being connected at one end thereof to the nozzle unit immediately below a respective one of the nozzles so that the cleaning water ejected from the nozzle flows down the upper surface of the filth scraping blade, whereby each filth scraping member slides reciprocally on and along the floor of the rearing space synchronously with the nozzle unit.

4,448,153

WATER INJECTION SYSTEM FOR A COMBUSTION ENGINE

Robert J. Miller, Warren, Mich., assignor to Colt Industries Operating Corp, New York, N.Y.

Filed Oct. 2, 1981, Ser. No. 307,790
Int. Cl.³ F02M *25/04*
U.S. Cl. 123—25 J **30 Claims**



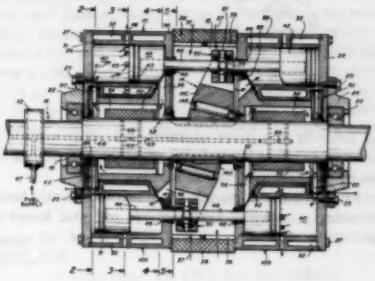
1. A water injection system for a combustion engine, comprising reservoir means for containing a supply of water, pump means for pumping said water from said reservoir to said engine, means responsive to indicia of engine load for at times permitting water pumped by said pump means to be discharged to said engine, said means responsive to indicia of engine load being effective to permit a plurality of generally constant rates of flow of said water to be discharged to said engine in a manner whereby there is no cessation of the flow of said water as between succeeding ones of said plurality of generally constant rates of flow of said water, and water flow circuit means communicating generally between said pump means and said engine, wherein said water flow circuit means comprises parallel flow paths, wherein said means responsive to indicia of engine load comprises a valve member, and wherein said valve member controls the flow of said water through at least one of said parallel flow paths.

4,448,154

INTERNAL COMBUSTION ENGINE

Horst K. Kossel, Shrewsbury, Mass., assignor to Paradox International, Incorporated, Morningdale, Mass.

Continuation of Ser. No. 34,866, Apr. 30, 1979, Pat. No. 4,313,404. This application Aug. 21, 1981, Ser. No. 295,028
Int. Cl.³ F02B *75/26*
U.S. Cl. 123—58 BB **10 Claims**



1. Apparatus for converting between linear motion and rotary motion comprising;

shaft means,

power transfer means including inner and outer members inclined to the shaft means extending substantially radially therefrom and intermediate bearing means between inner and outer members, said inner member being fixed to the shaft means,

linear motion member including a connecting rod,

and joint means disposed at the periphery of the outer member and for intercoupling the connecting rod of the linear motion member to the outer member,

said joint means comprising an outer open housing member and an inner member, means securing the connecting rod to the inner member, a first guide rod means coupling between the inner and outer members permitting linear sliding movement between said members in a direction normal to the longitudinal motion of the connecting rod to permit longitudinal motion of the connecting rod along a single linear path of operation, and a second guide rod means coupling orthogonally to the first guide rod means between the inner and outer members permitting linear sliding movement between said members in a direction normal to both the longitudinal motion of the connecting rod and the sliding relative to the first guide rod means,

said inner and outer members being relatively dimensioned so as to provide a clearance gap therebetween to enable the relative linear sliding therebetween as the power transfer means is driven, said clearance gap being at least of a width comparable to a difference in transition of the power transfer means outer member between a minimum radius position and a maximum radius position as measured orthogonally from said shaft means.

4,448,155

GUIDE FOR ROLLER CAM FOLLOWER

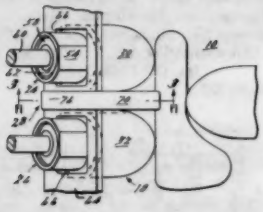
George A. Hillebrand, and Michael S. Paar, both of Battle Creek, Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Jun. 3, 1982, Ser. No. 384,450
Int. Cl.³ F01L *1/14*
U.S. Cl. 123—90.5 **23 Claims**

1. In an internal combustion engine of the type including a

valve train incorporating at least one roller cam follower and a block defining a boss characterized by an upper surface, a lower surface and a bore for slidably receiving said follower, follower guide means comprising:

a member defining keying surfaces nominally spaced from



said follower at a point adjacent said upper surface and operative to effect limited non-contacting rotational freedom of said follower within said bore; and

means for resiliently connecting said member to said boss by embracingly engaging said member and said lower surface.

4,448,156

VARIABLE GAS DISTRIBUTION DEVICE FOR INTERNAL COMBUSTION MOTORS

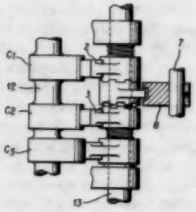
Claude Henault, Jouy en Josas, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Oct. 29, 1981, Ser. No. 316,278

Claims priority, application France, Nov. 13, 1980, 80 24129

Int. Cl.³ F01L *1/34*

U.S. Cl. 123—90.17 **5 Claims**



1. A variable valve timing device for an internal combustion engine, comprising:

at least two rocker arms mounted on a common rocker arm shaft;

two cams, each of said cams being engageable with one of said rocker arms for rotating said rocker arm about said shaft, each said cam having a different configuration;

a connecting element slidably mounted on said shaft between two of said rocker arms, said connecting element including a first portion and a second portion;

control means engageable with said first portion for moving each said connecting element along the axis of said shaft;

an engine cylinder valve engageable with said second portion for actuating said valve when said connecting element is rotated; and

coupling means associated with said rocker arms and said connecting element for rotatably coupling said connecting element to one of said rocker arms.

4,448,157

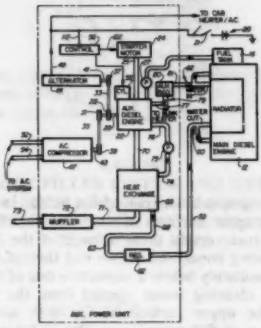
AUXILIARY POWER UNIT FOR VEHICLES

Robert J. Eckstein, 1202 Fairfield Rd., Round Lake Beach, Ill. 60073, and Roger L. Mason, 3156 Fulling Mill Rd., Middletown, Pa. 17057

Filed Mar. 8, 1982, Ser. No. 355,770

Int. Cl.³ F02N *17/02*

U.S. Cl. 123—142.5 R **10 Claims**



1. In an auxiliary power unit for operation with a vehicle main liquid-cooled diesel internal combustion engine having a liquid coolant inlet and a liquid coolant outlet, and having a radiator, and exhaust gas conduit and a vehicle diesel fuel tank, apparatus comprising:

a small auxiliary liquid-cooled diesel internal combustion engine having an output shaft, said engine having liquid inlet means and liquid outlet means;

power producing means having an input shaft drivingly connected to said output shaft for producing electrical energy;

a first T connector for connecting in fluid communication the main engine radiator and the coolant outlet of the main engine;

first conduit means connecting in fluid communication the first T connector and the auxiliary engine liquid inlet;

a second T connector for connecting in fluid communication the main engine radiator and the coolant inlet of the main engine;

second conduit means coupling in fluid communication the main engine liquid inlet means and the auxiliary engine outlet means to complete a single closed-loop coolant path of recirculation;

pumping means for recirculating coolant through said path of recirculation including said conduit means;

heat exchanging means connected in fluid communication in said coolant path of recirculation for supplying heat to said coolant being recirculated;

means connecting the main engine exhaust gas conduit to said heat exchanging means for supplying heat thereto to, in turn, supply said heat to the coolant flowing through said heat exchanging means; and

means for conveying diesel fuel from the main engine fuel tank.

4,448,158

THROTTLE CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

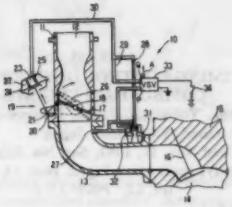
Tokuzi Ishida, Hamamatsu, and Wataru Yamamoto, Kami, both of Japan, assignors to Suzuki Jidosha Kogyo Kabushiki Kaisha, Shizuoka, Japan

Filed Sep. 30, 1982, Ser. No. 430,067

Claims priority, application Japan, Oct. 27, 1981, 56-170705; Feb. 4, 1982, 57-15498

Int. Cl.³ F02M *1/16*

U.S. Cl. 123—179 G **12 Claims**



1. A throttle control system for an internal combustion engine having a cylinder, comprising:

(a) an intake passage having a throttle valve disposed therein for allowing a air-fuel mixture to flow in a direction into the cylinder;

(b) a vacuum-operated actuator operatively connected to said throttle valve for opening the latter through a predetermined angle in response to a vacuum signal;

(c) a vacuum pickup port opening into said intake passage downwardly of said throttle valve with respect to said direction of flow of the air-fuel mixture;

(d) a first vacuum passage communicating between said vacuum-operated actuator and said vacuum pickup port and having a first thermosensitive valve for opening said first vacuum passage when the engine is kept below a preset temperature; and

(e) a second vacuum passage communicating between said vacuum-operated actuator and said vacuum pickup port in parallel relation to said first vacuum passage, and having a second thermosensitive valve for opening said second vacuum passage when the engine is kept above said preset temperature and a directional control valve responsive to cranking of the engine for opening said second vacuum passage.

4,448,159

V-TYPE INTERNAL COMBUSTION ENGINE

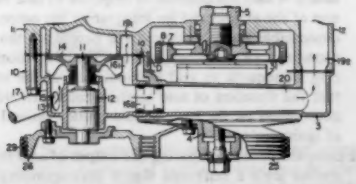
Yoshiaki Hidaka, and Tadashi Tsuchiyama, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 5, 1982, Ser. No. 346,280

Claims priority, application Japan, Feb. 16, 1981, 56-21144; Feb. 16, 1981, 56-21145

Int. Cl.³ F01P *3/02*

U.S. Cl. 123—195 C **2 Claims**



1. In an internal combustion engine having a cylinder block with two banks of cylinders arranged in a V-shape and having a crankshaft supported in said block, the improvement comprising, in combination: a camshaft positioned above the crankshaft and mounted centrally on said block between the two banks of cylinders, timing gear means including driving and driven gears positioned only in front of the cylinder block for driving the camshaft in timed relation with the crankshaft, a coolant pump secured to the cylinder block laterally offset from the crankshaft and adjacent one bank of cylinders, a first discharge passage from said coolant pump to said bank of cylinders, means in front of said timing gear means for driving the coolant pump from said crankshaft, the front of said timing gear means facing a direction same as the front of said engine block, said pump driving means including driving and driven pulleys mounted on the crankshaft and the coolant pump, respectively, and a second discharge passage positioned between a plane formed by said driving and driven gears of the timing gear means and a second plane formed by said driving and driven pulleys of the said pump driving means, said second discharge passage extending from said coolant pump to the other bank of cylinders.

4,448,160

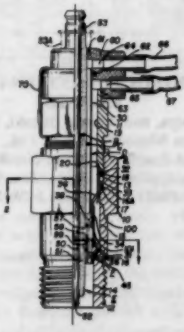
FUEL INJECTOR

George W. Vosper, 140 Earl St., Kingston, Ontario, Canada K7L 2H3

Filed Mar. 15, 1982, Ser. No. 358,011

Int. Cl.³ F02M *57/06*

U.S. Cl. 123—297 **14 Claims**



1. An automobile spark plug having a threaded mounting body member, an elongate insulated electrode extending through said body member and terminating in an ignitor tip at one end thereof, first and second concentric annular fluid-flow passageways having different diameters in said body member and surrounding said insulated electrode, and a fluid-flow atomizing means interconnecting said annular fluid-flow passageways with one another at one location and downstream therefrom discharging into a common passage surrounding the electrode adjacent the tip end thereof.

4,448,161

INTERNAL COMBUSTION ROTARY POWER PLANT SYSTEM

Ching-Ho Tseng, 7307 Caracas Dr., Houston, Tex. 77083

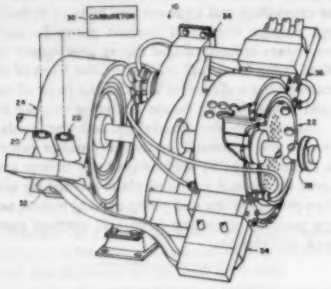
Division of Ser. No. 160,628, Jun. 18, 1980. This application Apr. 14, 1982, Ser. No. 368,390

Int. Cl.³ F02B *53/00*

U.S. Cl. 123—237 **1 Claim**

1. In an integrally supported system of an internal combustion rotary engine with means for engine valving, a first rotor and a first housing; a rotary compressor with a second rotor and a second housing for supplying gaseous fuel to the rotary

engine, a gearbox with gearing therein for synchronizing said valving means, and a driveshaft connecting all of said rotary engine, rotary compressor and gearbox, the improvement comprising: the first and second rotors being fixed on respective end portions of the driveshaft in axially spaced relation with the gearbox, the driveshaft having a central portion lo-



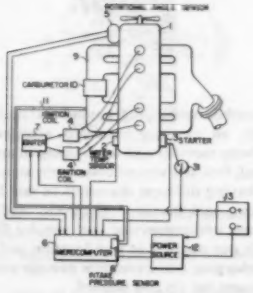
cated for attachment to a foundation and the gearbox centrally supporting the driveshaft thereby and through the driveshaft being the support for the first and second rotors; means spacedly connecting the gearbox with the first housing and with the second housing, and said gearbox through said spaced connection being the support for the first housing and the second housing.

4,448,162

OPTIMUM CONTROL FOR INTERNAL COMBUSTION ENGINES

Masakazu Ninomiya, and Atsushi Suzuki, both of Kariya, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jun. 7, 1982, Ser. No. 386,097
Claims priority, application Japan, Jun. 8, 1981, 56-87703
Int. Cl.³ F02D *5/04*; F02P *5/08*; F02B *3/04*
U.S. Cl. 123—419 **8 Claims**



1. In an optimum control method for an internal combustion engine comprising the steps of:

calculating a value of one of plural control variables of said engine in response to an operating condition of said engine;

dithering the value of said control variable with a predetermined value from the calculated value of said control variable; operating said engine at the dithered value of said control variable;

detecting a resulting change of a rotational speed of said engine during a predetermined time period;

deciding a direction of changing the value of said control variable toward an optimum value thereof in accordance with a result of said detection;

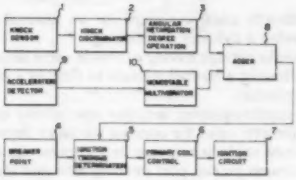
correcting the value of said control variable in said direction toward the optimum value thereof, the improvement wherein, during each period of the operation of said engine by dithering the value of said control variable, the rotational speed of said engine speed is detected two or more times thereby to decide a direction of the change thereof accurately.

4,448,163

IGNITION TIMING CONTROL DEVICE FOR INTERNAL COMBUSTION ENGINES

Kenichi Yoshida, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Nov. 17, 1981, Ser. No. 322,168
Claims priority, application Japan, Dec. 11, 1980, 55-174990
Int. Cl.³ F02P *5/04*
U.S. Cl. 123—422 **16 Claims**



1. An ignition timing control device for an internal combustion engine, comprising:

first means for setting the normal ignition timing of the engine;

second means responsive to occurrence of knocking in said engine for providing a first signal;

third means responsive to manipulation of the engine for achieving an acceleration higher than a predetermined acceleration level, for providing a second signal; and

fourth means for determining the actual ignition timing of the engine, said fourth means being adapted, responsive to said first signal, for setting the ignition timing for an optimum knocking condition, said fourth means being also adapted, responsive to said second signal, for causing said normal ignition timing to be quickly retarded in accordance with said second signal to such an extent that knocking tending to occur when said manipulation of the engine is made can be avoided, and for causing said normal ignition timing to be recovered immediately after the end of the retardation thereof,

said third means comprising:

a monostable multivibrator responsive to a signal derived from said first means;

an integrator circuit adapted to be reset by a signal obtained in said third means in response to said manipulation of the engine and for integrating the output of said monostable multivibrator for a period of time corresponding to a predetermined number of ignitions occurring subsequent to said manipulation of the engine so that the duration of said ignition timing retardation is determined on the basis of said predetermined number of ignitions; and

a comparator for comparing the output of said integrator circuit with a reference signal corresponding to said predetermined acceleration level, thereby providing said second signal.

4,448,164

INTAKE PASSAGE CONSTRUCTION FOR INTERNAL COMBUSTION ENGINES

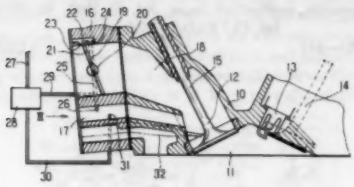
Tokuzi Ishida, Hamamatsu, Japan, assignor to Suzuki Jidosha Kogyo Kabushiki Kaisha, Shizuoka, Japan

Filed Sep. 30, 1982, Ser. No. 430,066

Claims priority, application Japan, Nov. 13, 1981, 56-180981

Int. Cl.³ F02B *15/00*

U.S. Cl. 123—432 **9 Claims**



1. An intake passage construction for an internal combustion engine having a combustion chamber, comprising:

(a) a primary intake passage opening into the combustion chamber for supplying an air-fuel mixture when the engine operates under a full range of loads;

(b) a secondary intake passage opening into the combustion chamber for supplying an air-fuel mixture when the engine operates under relatively high loads;

(c) a secondary throttle valve pivotably mounted in said secondary intake passage for controlling the flow of the air-fuel mixture through said secondary intake passage;

(d) a secondary slow fuel passage connected to a fuel supply and having a pair of fuel supply ports opening into said secondary intake passage adjacent to said secondary throttle valve;

(e) a fuel drain passageway means communicating with one of said pair of fuel supply ports for discharging fuel from said secondary slow fuel passage to remove fuel vapors from the secondary slow fuel passage; and

(f) means for introducing air into said fuel drain passageway means as a result of a vacuum developed in said primary intake passage.

4,448,165

FUEL INJECTION PUMPING APPARATUS

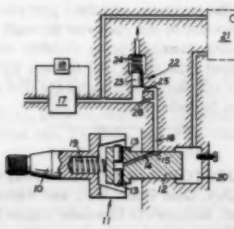
Robert T. J. Skinner, High Wycombe, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Sep. 2, 1981, Ser. No. 298,802

Claims priority, application United Kingdom, Oct. 29, 1980, 8034741

Int. Cl.³ F02D *17/00, 1/06*

U.S. Cl. 123—179 L **5 Claims**



1. A liquid fuel injection pumping apparatus for supplying fuel to an internal combustion engine, comprising an injection pump operable in use to deliver fuel in timed relationship with an associated engine, a low pressure supply pump for supplying fuel to the injection pump, valve means for controlling the output pressure of the supply pump so that it varies in accordance with the speed at which the apparatus is driven, a resiliently loaded component defining a surface upon which the output pressure of the supply pump acts to vary the amount of fuel supplied at each injection stroke of the injection pump, a pressure responsive valve responsive to the output pressure of the low pressure supply pump located between the low pressure supply pump and the injection pump, said valve being arranged to close when the output pressure of the low pressure supply pump is below a predetermined value, and a restricted flow path through which fuel can be supplied to the injection pump for the purpose of starting the engine.

4,448,166

OVERHEAD CAM TYPE DIESEL ENGINE

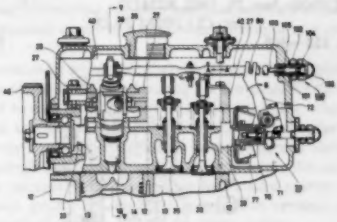
Koichi Amemori, and Toshihiko Kawabe, both of Takatsuki, Japan, assignors to Yanmar Diesel Engine Co., Ltd., Osaka, Japan

Filed Nov. 30, 1981, Ser. No. 325,763

Claims priority, application Japan, Nov. 28, 1980, 55-169688[U]; Nov. 28, 1980, 55-169691[U]

Int. Cl.³ F02M *39/02, 59/20;* F02D *1/02*

U.S. Cl. 123—445 **3 Claims**



1. An overhead cam type diesel engine, comprising:

unit injectors mounted on a cylinder head in an oblique arrangement relative to an axes of cylinder,

a rocker arm for actuating an intake valve and another rocker arm for actuating an exhaust valve, disposed on one and another side of each unit injector,

a further rocker arm for actuating the unit injector, disposed between said rocker arm and said another rocker arm,

a single cam shaft disposed parallel with a crankshaft for actuating said rocker arm, said another rocker arm and said further rocker arm,

a rocker arm shaft disposed parallel with said cam shaft, said further rocker arm being supported on said rocker arm shaft in a rockable manner and also in a slidable manner in an axial direction of rocker arm shaft,

a pair of support beds disposed in a manner of interposing said rocker arm and said another rocker arm between them and thereon securely supporting said rocker arm shaft,

two shafts respectively projected from said support beds toward a vicinity of said unit injector, said rocker arm and said another rocker arm being rockably supported on one and another of said two shafts said unit injectors are each provided with a plunger for adjusting a fuel injection quantity and a fork-shaped lever secured to said plunger, said fork-shaped lever engaging a pin mounted parallel with the unit injectors, on a control rod disposed parallel with the crankshaft.

3. An overhead cam type diesel engine, comprising:

a rocker arm for actuating an intake valve, another rocker arm for actuating an exhaust valve and a further rocker arm for actuating an injector, disposed between said rocker arm and said another rocker arm,

a single cam shaft disposed parallel with a crankshaft for

actuating said rocker arm, said another rocker arm and said further rocker arm,

a control rod disposed parallel with said cam shaft and capable of being reciprocated in an axial direction of the cam shaft,

a governor mounted at one end of said cam shaft,

a governor lever disposed in a vicinity of said governor and pressed at its one end by an end face of the governor and engaging at its other end with a pin secured to said control rod,

a cylindrical support member secured at an intermediate portion of said governor lever in a perpendicular arrangement to the lever, and

a torsion bar having a torsion spring force, fixed with its one end to an end face of said cylindrical support member and with its other end to a shaft of a regulator handle.

4,448,167

FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES

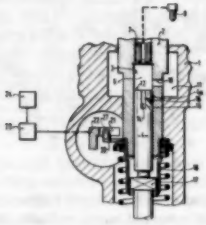
Werner Schmid, Dischingen, and Karl Rapp, Stuttgart, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 29, 1982, Ser. No. 403,197

Claims priority, application Fed. Rep. of Germany, Aug. 1, 1981, 3130620; Jun. 29, 1982, 3224127

Int. Cl.³ F02M *39/00*

U.S. Cl. 123—446 **6 Claims**



1. A fuel injection pump for internal combustion engines, comprising:

a cylinder;

a pump piston mounted to reciprocate within the cylinder;

an adjusting device connected to the piston injection pump to alter the termination of the piston supply stroke by rotating the piston between no-load and maximum load terminal positions;

said cylinder having at least one fuel opening extending through a wall thereof;

said pump piston having an end face and an outer jacket surface extending from the end face,

at least one longitudinal stop groove and one oblique groove formed in said outer jacket surface,

said oblique groove extending over a circumferential portion of said jacket surface and oriented obliquely to said end face,

said oblique groove communicating with said longitudinal stop groove,

and stop means for limiting the rotation of the piston by said adjusting device at least at said maximum load terminal position,

the location of said stop means and at least a portion of the width of said at least one longitudinal groove being related such that said at least one opening in the cylinder wall reaches a congruent relationship with at least said one longitudinal groove shortly before said maximum load terminal position is reached.

4,448,168

FUEL INJECTION SYSTEM

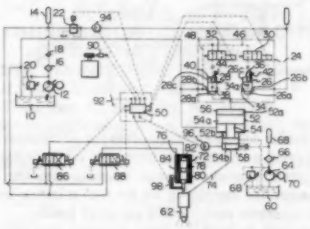
Hideaki Komada; Yutaka Kojima, and Tomonori Ohie, all of Matsuyama, Japan, assignors to Diesel Kiki Company, Ltd., Tokyo, Japan

Filed Jul. 19, 1982, Ser. No. 399,514

Claims priority, application Japan, Jul. 30, 1981, 56-119734

Int. Cl.³ F02M *51/00*

U.S. Cl. 123—446 **6 Claims**



1. A fuel injection system including a booster for compressing at one end thereof a supply of fuel pumped from a fuel reservoir, a fuel injector supplied with the compressed fuel from the booster to start and terminate a fuel injection at controlled timings, a fluid reservoir storing operating hydraulic fluid substantially under atmospheric pressure, and a pump for compressing the operating fluid by sucking it from the fluid reservoir, characterized by comprising:

a valving means for operating the booster by selectively communicating the other end of the booster to the fluid pressure in the fluid reservoir and the delivery pressure of the pump; and

a control means for controlling the operation of the valving means in response to a varying operating condition of an engine with which the fuel injection system is associated;

the valving means comprising a poppet type valve formed with a first port communicating to said other end of the booster, a second port communicating to the delivery pressure of the pump and a third port communicating to the fluid pressure in the fluid reservoir through a pilot valve, a valve member being slidably received in said valve and formed with a restriction passageway therethrough which provides communication between the second and third ports, and a second poppet type valve formed with a first port communicating to said other end of the booster, a second port communicating to the fluid pressure in the reservoir, and third port communicating to the fluid pressure in the reservoir through a second pilot valve, a valve member being slidably received in said second poppet type valve and formed with a restriction passageway which communicates the first and third ports of the valve to each other.

4,448,169

INJECTOR FOR DIESEL ENGINE

Patrick R. Badgley, Glen Rock, N.J., and Andrew C. Rosselli, Columbus, Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.

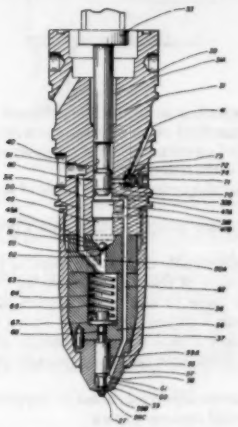
Filed Dec. 31, 1980, Ser. No. 221,764

Int. Cl.³ F02M *39/00*

U.S. Cl. 123—467 **7 Claims**

1. An injector to introduce fuel into the cylinder of a diesel engine, said injector comprising an elongated housing having a

spray tip means at one end thereof for introducing fuel into a combustion chamber formed in the cylinder, said housing including an inlet port for connection to a pressurized source of diesel fuel, an exit port for connection to a diesel fuel return, and a primary axial bore having a generally uniform diameter, said bore selectively communicating with said inlet and exit ports and having first and second portions with said first portion being proximate said spray tip means, a plunger axially movable within said bore and operatively connected to reciprocating means to selectively withdraw and depress said plunger, said plunger and bore coacting to form a fluid-tight chamber in the first portion of said primary bore, said chamber expanding to admit fuel supplied via said inlet port when said plunger is at least partially withdrawn, and partially contracting to expel therefrom a predetermined amount of the admitted fuel when said plunger is at least partially depresssed, the



expelled fuel amount being pumped by the plunger from an upper section of the chamber to said spray tip means via a first passage formed in said housing, the remainder of the admitted fuel being entrapped and continuously maintained within a lower sealable section of the chamber to dampen plunger movement into said chamber; a spill valve means selectively communicating with said chamber, and operating in conjunction with the reciprocating of said plunger; and an internal second passage formed in said housing and connecting said spill valve to said exit port, so that when said plunger is in a predetermined depressed position within said bore effecting communication between said spray tip means and said exit port via said first passage and said spill valve, the pressure in said spray tip means collapses to sharply end injection while said chamber lower section remains sealed to dampen plunger movement.

4,448,170

WATER INJECTION SYSTEM FOR INTERNAL COMBUSTION ENGINE

Arthur C. O'Hara, 4978 Skyline Dr., Syracuse, N.Y. 13215

Filed Jun. 14, 1982, Ser. No. 388,359
Int. Cl.³ F02M *25/02*
U.S. Cl. 123—25 A **2 Claims**

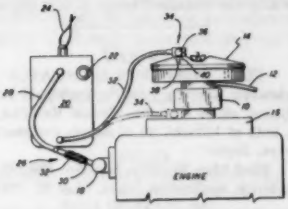
1. A water injection system for installation on a conventional internal combustion engine of a motor vehicle to automatically add controlled amounts of water to the engine fuel intake as a function of pressure in the engine's exhaust manifold, said system comprising, in combination:

(a) an enclosed, flexible-walled, plastic container supported adjacent the engine and holding a quantity of water;

(b) a length of hollow, metal tubing surrounded by an extended surface heat exchanger and having one end communicating with the interior of said exhaust manifold;

(c) a first length of hollow, flexible, plastic tubing having a first internal diameter and connected at one end to the other end of said metal tubing and at the other end to an upper portion of said container, whereby the pressure in said exhaust manifold is communicated to said container upper portion after the temperature of the exhaust gases has been suitably reduced by said metal tubing and heat exchanger;

(d) a second length of hollow, flexible, plastic tubing having



a second internal diameter less than said first diameter and connected at one end to a lower portion of said container; and

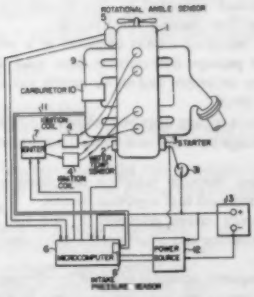
(e) a manually adjustable throttling valve mounted upon the top of the air intake housing for the engine's carburetor, and having an inlet connected directly to the other end of said second plastic tubing and an outlet discharging directly into the carburetor air intake, whereby water flows through said second tubing and valve into the carburetor for mixture with the normal fuel intake system as governed jointly by the exhaust manifold pressure and the degree of opening of said throttling valve.

4,448,171

METHOD AND APPARATUS FOR OPTIMUM CONTROL OF INTERNAL COMBUSTION ENGINES

Masakazu Ninomiya, and Atsushi Suzuki, both of Kariya, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jun. 7, 1982, Ser. No. 386,096
Claims priority, application Japan, Jun. 8, 1981, 56-87702
Int. Cl.³ F02P *5/08, 5/04;* **F02B** *3/04*
U.S. Cl. 123—419 **7 Claims**



1. In a method for optimum control of an internal combustion engine comprising the steps of:

calculating a value of one of plural control variables of said engine in response to an operating condition of said engine;

dithering the value of said control variable with a predeter-

mined value from the calculated value of said control variable;

operating said engine at the dithered value of said control variable;

detecting a resulting change of a rotational speed of said engine during a predetermined time period;

deciding a direction of changing the value of said control variable toward an optimum value thereof in accordance with a result of said detection;

correcting the value of said control variable in said direction toward the optimum value thereof, the improvement wherein said predetermined time period is varied in accordance with the rotational speed of said engine.

4,448,172

FUEL INJECTION APPARATUS

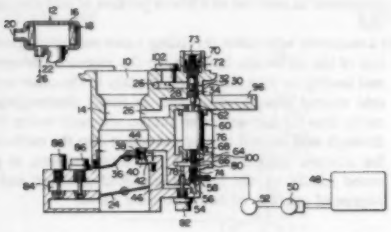
Mineo Kashiwaya; Kinsaku Yamada; Yoshiyuki Tanabe; Yoshishige Oyama, all of Katsuta; Hiroshi Kuroiwa, and Hisato Tsuruta, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 20, 1982, Ser. No. 380,339

Claims priority, application Japan, May 22, 1981, 56-78196

Int. Cl.³ F02M *51/00*

U.S. Cl. 123—494 **4 Claims**



1. In a fuel injection apparatus comprising:

an air intake passage connecting an air cleaner housing air filters to an engine to be supplied with an air-fuel mixture gas;

a venturi portion provided in said air intake passage;

a throttle valve provided within a portion of said air intake passage downstream from said venturi portion;

a bypass air passage one end of which opening into said venturi portion;

a sensing means provided in said bypass air passage for sensing air flow passing therethrough;

an air flow metering means disposed in a portion of said bypass air passage downstream from said sensing means and having an orifice and an air needle valve cooperating with the latter;

a fuel injection means disposed within a portion of said air intake passage between said venturi portion and said throttle valve;

a fuel passage through which a fuel from a fuel tank is pumped into said fuel injection means;

a fuel metering means disposed in said fuel passage and having an orifice and a fuel needle valve cooperating with the latter;

an electromagnetic actuator adapted for driving said air flow metering means and said fuel metering means; and

electric means for controlling said electromagnetic actuator so as to control said air flow metering means and said fuel metering means;

wherein the improvement comprises that the other end of said bypass air passage opens into a portion located upstream from one end of said air intake passage adjacent to said air cleaner.

4,448,173

FUEL EVAPORATOR

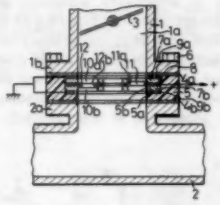
Seiko Abe, Kariya, and Kazuhide Watanabe, Toyohashi, both of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Feb. 25, 1983, Ser. No. 469,715

Claims priority, application Japan, Mar. 10, 1982, 57-37419

Int. Cl.³ F02M *31/00*

U.S. Cl. 123—549 **22 Claims**



1. A fuel evaporator to be installed between a carburetter and an intake manifold of an internal combustion engine for heating an air-fuel mixture flowing through an air-fuel mixture passage of said carburetter, comprising:

at least one circular ceramic heater made of semi-conductive material;

said ceramic heater being provided with a plurality of open passages;

at least one electrically conductive metallic plate provided with a plurality of open passages having the same shape and size as those of said open passages of said ceramic heater, which is disposed in contact with a surface of said ceramic heater so that said open passages of said metallic plate are coaxial with said open passages of said ceramic heater;

an electric current supplying means for supplying an electric current to said ceramic heater;

said electric current supplying means comprising electrode plate means having an inner diameter equal to the diameter of said air-fuel mixture passage, which is disposed in contact with said ceramic heater;

an annular insulator made of electric insulating material for supporting said ceramic heater, said metallic plate and said electric current supplying means;

said insulator having an inner diameter equal to the diameter of said air-fuel passage of said carburetter and being interposed between said carburetter and said intake manifold through gaskets;

said open passages of said metallic plate being defined by edge portions, at least one of which is bent in the axial direction of said open passages of said ceramic heater and closely inserted into a corresponding open passage of said ceramic heater;

said metallic plate being fixed to said insulator in the outer peripheral portion of said metallic plate.

4,448,174

DISTRIBUTOR TYPE FUEL INJECTION PUMP ADAPTABLE TO INTERNAL COMBUSTION ENGINES WITH A WIDE RANGE OF THE NUMBER OF CYLINDERS

Seizi Takahashi, and Hachiro Aoki, both of Matsuyama, Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan

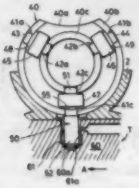
Filed Feb. 18, 1983, Ser. No. 467,787

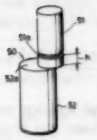
Int. Cl.³ F02M *59/20*

U.S. Cl. 123—502 **8 Claims**

1. A distributor type fuel injection pump for an internal combustion engine, comprising: a pumping plunger; a drive shaft disposed for rotation at speeds dependent upon the rotational speed of the engine; a cam disc having a camming surface, said cam disc being secured to said plunger and coupled

to said drive shaft for rotation in unison therewith; a roller holder disposed for circumferential displacement about an axis thereof; a plurality of rollers carried by said roller holder in radial arrangement, said rollers being disposed in urging contact with said camming surface of said cam disc; injection timing control means having an element displaceable in response to the rotational speed of the engine; and means connecting said roller holder with said displaceable element of said injection timing control means, said connecting means including an eccentric member comprising a first portion and a second portion combined together in eccentricity with each other, said first portion engaging with said roller holder and supporting a predetermined one of said rollers rotatably fitted thereon, said second portion engaging with said displaceable element of said injection timing control means; wherein displacement of said displaceable element of said injection timing control means causes circumferential displacement of said roller holder through said eccentric member of said connecting means, to thereby change the injection timing of fuel into the engine.



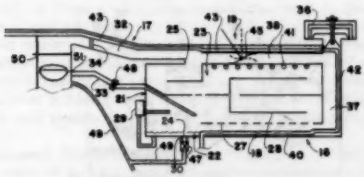


4,448,175

FUEL APPARATUS

Bruce L. Darvial, 2754 Hollister Cir.; Phillip L. Heintz, 7405 Castle Rock Lake Dr.; John S. Smith, P.O. Box 1674, and Lee A. Walth, P.O. Box 608, all of Colstrip, Mont. 59323

Filed Jan. 24, 1983, Ser. No. 460,372
Int. Cl.³ F02M *31/00*
U.S. Cl. 123—557 **14 Claims**



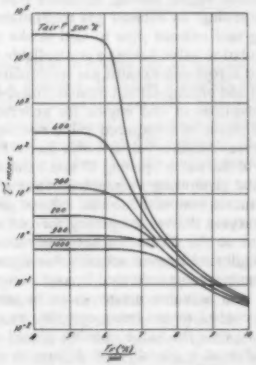
1. Fuel apparatus including a fuel vaporizing portion, an air conveying portion, a heating portion and a flow control portion; said fuel vaporizing portion including an enclosed chamber, said chamber including a liquid reservoir section and a vapor expansion section, said vapor expansion section including a plurality of baffle means providing a tortuous path through said expansion section, a liquid fuel inlet to said chamber and a vapor outlet from said chamber, first vapor conduit means connecting said chamber outlet with a carburetor of an engine, second vapor conduit means connecting said engine carburetor with said chamber adjacent said vapor expansion section thereof; said air conveying portion including an air intake section, means for dividing air flowing through said air intake section, first duct means for conveying one part of said air flow to a point adjacent said liquid reservoir section of said enclosed chamber, second duct means for conveying a second part of said air flow to said vapor conduit means; said heating portion being disposed adjacent said enclosed chamber, said air duct means and said vapor conduit means; said flow control portion including adjustable damper means located in said second air duct means, said damper means providing a more open path through said second air duct means when said engine is idling or decelerating and providing a more closed path when said engine is accelerating; whereby liquid fuel is vaporized in said enclosed chamber, mixed with heated air and selectively delivered to said carburetor with a second vapor source and a second air source being delivered independently to said carburetor when said heated vapor/air mixture is not being delivered in significant quantities, said selective delivery being in response to changes in the vacuum level of said engine.

4,448,176

METHOD FOR REDUCING IGNITION DELAY OF FUELS

Lyle O. Hoppie, Birmingham, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Feb. 22, 1982, Ser. No. 350,780
Int. Cl.³ F02M *31/00*
U.S. Cl. 123—558 **7 Claims**



1. A method of reducing ignition delay, τ, of a fuel, to a negligible value, comprising the steps of:

determining τ according to a relation wherein

$$\tau \sim (1/KwN_o)e^{+Ea/RTf};$$

where

τ is the ignition delay,

K is the temperature rise when one fuel molecule is oxidized,

w is the reaction rate of the fuel molecules in air, N_o is the density of molecules in ground and excited states at time (t)=O,

e is the base of natural logarithms,

E_a is the activation energy of the fuel,

R is the universal gas constant, and

T_f is the temperature of the fuel; and

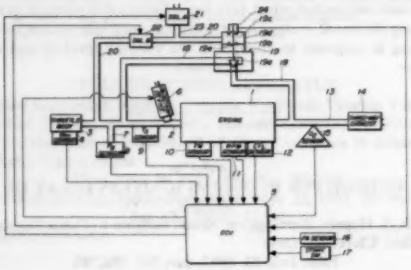
heating the fuel prior to injection into an oxidant to a temperature T_f such that the fuel self-ignites substantially instantaneously when injected into an oxidant, such that the fuel requires substantially no heat transfer from the oxidant to effect said self-ignition, and such that the amount of said self-ignition is sufficient to sustain continued combustion.

4,448,177

EXHAUST GAS RECIRCULATION CONTROL SYSTEM HAVING VARIABLE VALVE LIFT CORRECTING SPEED FOR EXHAUST GAS RECIRCULATION VALVE

Shumpei Hasegawa, Niiza; Takashi Koumura, Iruma; Toyohei Nakajima, Setagaya; Junichi Miyake, Iruma, and Junichi Kimura, Higashimurayama, all of Japan, assignors to Honda Motor Co., Ltd., Tokyo, Japan

Filed Nov. 1, 1982, Ser. No. 437,894
Int. Cl.³ F02M *25/06*
U.S. Cl. 123—571 **11 Claims**



1. An exhaust gas recirculation control system for use in an internal combustion engine having an intake pipe and an exhaust pipe, comprising: an exhaust gas recirculating passageway connecting said exhaust pipe to said intake pipe; an exhaust gas recirculation valve having a controllable valve opening and arranged across said exhaust gas recirculating passageway for opening and closing same; command means responsive to operating conditions of said engine for generating a command signal indicative of a required valve opening value for said exhaust gas recirculation valve; sensor means for detecting an actual value of the valve opening of said exhaust gas recirculation valve and generating a signal indicative of said actual value; actuator means connected to said exhaust gas recirculation valve for varying the valve opening thereof; and control means responsive to the difference between an actual valve opening value indicated by said actual value signal and a required valve opening value indicated by said command signal for controlling said actuator means so as to minimize said difference, said control means being operable to control said actuator means to vary the valve opening of said exhaust gas recirculation valve at a plurality of difference speeds in a manner such that a higher speed is selected when said difference has a larger absolute value, and a lower speed is selected when said difference has a smaller absolute value.

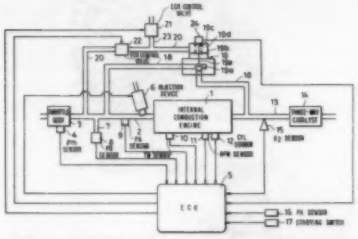
4,448,178

ELECTRONIC FUEL SUPPLY CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES, HAVING EXHAUST GAS RECIRCULATION CONTROL

Akihiro Yamato, Sayama, and Shigeo Umesaki, Iruma, both of Japan, assignors to Honda Motor Co., Ltd., Tokyo, Japan

Filed Nov. 10, 1982, Ser. No. 440,542
Claims priority, application Japan, Nov. 11, 1981, 56-180764
Int. Cl.³ F02M *25/06*
U.S. Cl. 123—571 **10 Claims**

1. An electronic fuel supply control system for combination with an internal combustion engine having an intake passage, an exhaust passage, exhaust gas recirculating means for returning part of exhaust gases from said exhaust passage to said intake passage, and fuel delivery means, said electronic fuel injection control system comprising: means for driving said fuel delivery means; first sensor means for detecting a first parameter representing operating condition of the engine and generating a first signal indicative of a detected value of said first parameter; second sensor means for detecting a second parameter representing operating condition of the engine and generating a second signal indicative of a detected value of said seond parameter; first memory means storing a first group of predetermined output values being functions of the first and second signals; second memory means storing a second group of predetermined output values being functions of the first and second signals but different from the predetermined output values in the first group; means for determining whether or not the exhaust gas recirculation is being carried out by said ex-



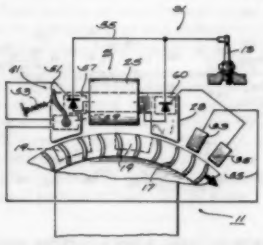
haust gas recirculating means; and selector means responsive to an output signal from said exhaust gas recirculation determining means to selectively allow one of said first and second groups of predetermined output values in said first and second memory means to be supplied to said driving means; whereby said driving means is operable to drive said fuel delivery means so as to supply quantities of fuel corresponding to output values in the selected one of said first and second groups to the engine.

4,448,179

ENGINE INCLUDING MEANS FOR RETARDING SPARKING OPERATION TO CONTROL ENGINE OVERSPEED

Leslie W. Foster, 2154 Sheridan Hills Rd., Wayzata, Minn. 55391

Continuation-in-part of Ser. No. 309,557, Oct. 8, 1981, abandoned. This application Sep. 7, 1982, Ser. No. 415,340
Int. Cl.³ F02G *1/00*; F02P *5/04, 1/00*
U.S. Cl. 123—599 **6 Claims**



1. An internal combustion engine including means comprising a relatively rotatable magnet and coil means for providing a potential capable of producing a spark when applied to a spark plug, means selectively operable for applying said potential to a spark plug to selectively produce sparks at a normal and retarded timing relative to top dead center and comprising said rotatable magnet, first trigger means mounted adjacent to said magnet for generating a first signal which is effective to cause sparking operating at a normal timing, second trigger means mounted adjacent to said magnet in spaced relation to said first trigger means and operable to generate a second signal which is effective, when said first signal is disabled, to cause sparking operation at a retarded timing, and means oper-

able in response to engine rotation above a given speed for operating said selectively operable means to change the timing of sparking operation from said normal timing to said retarded timing, said means for operating said selectively operable means to change the timing of sparking operation comprising switch means coupled to said first trigger means and operative to interrupt operation of said first trigger signal to cause sparking operation, and means for operating said switch means including a member movable between a first position which is inoperative to actuate said switch means and a second position which is operative to actuate said switch means so as to disable said first signal from causing sparking operation.

4,448,180

IGNITION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

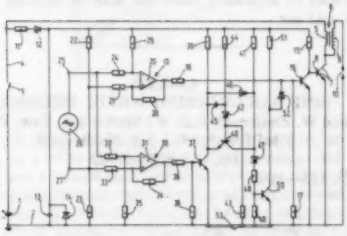
Bernd Bodig, Leinfelden-Echterdingen; Gerd Höhne, Ludwigsburg, and Bernd Kalkhof, Reutlingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Fed. Rep. of Germany

Filed Oct. 13, 1982, Ser. No. 433,957

Claims priority, application Fed. Rep. of Germany, Apr. 28, 1982, 3215728

Int. Cl.³ F02P *9/00, 3/04*

U.S. Cl. 123—618 **3 Claims**



1. Ignition system for an internal combustion engine of the kind utilizing a d.c. voltage source for providing power through an ignition system enabling switch, an engine-driven a.c. generator for providing a timing wave, an ignition coil having a primary and a secondary winding, an electronic interruptor switch in circuit with said primary winding and said d.c. voltage source and means responsive to the timing wave of said a.c. generator for timing the closing and opening of said interruptor switch, said timing means including a first threshold switch responsive to said timing wave of said a.c. generator constituted so as to switch on and to switch off a respective predetermined polarity conditions of said timing wave, said system also having the improvement which comprises:

a second threshold switch (**30**) responsive to said timing wave of said a.c. generator and having its input in shunt with the input of said first threshold switch, and

a delay circuit (**53**) connected to the output of said second threshold switch and interposed between said second threshold switch and a control circuit for operating interruptor switch which is also responsive to said first threshold switch,

said first and second threshold switches being so constituted so that:

in normal operation the switchover of said interruptor switch into its nonconducting condition is produced in response to said first threshold switch (**19**);

in other cases, the switchover of said interruptor switch into its nonconducting condition is produced in response to said delay circuit (**53**) prior to a corresponding operation of said first threshold switch, and

with reference to the null transition of said a.c. timing wave (U) the switch-on threshold (U) and the switch-off threshold (U) of said first threshold switch (**19**) are of opposite polarities, whereas the switch-on threshold (U) and the switch-off threshold (U) of said second threshold switch are of the same polarity as that of said switch-on threshold (U) of said first threshold switch (**19**).

4,448,181

PLASMA IGNITION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

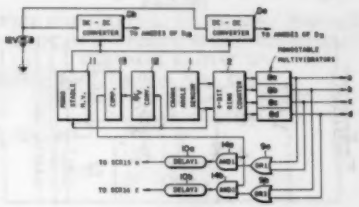
Yasuki Ishikawa; Hiroshi Endo; Masazumi Sone, and Iwao Imai, all of Yokosuka, Japan, assignors to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Jun. 7, 1982, Ser. No. 386,782

Claims priority, application Japan, Jun. 9, 1981, 56-87443

Int. Cl.³ F02P *3/08*

U.S. Cl. 123—620 **18 Claims**



1. A plasma ignition system for an internal combustion engine having a plurality of engine cylinders each of which is provided with a plasma ignition plug, which comprises:

(a) power supply means for separately generating and deriving first and second high DC voltages, the first high DC voltage being higher than the second high DC voltage;

(b) a first switching unit for sequentially applying the first high DC voltage generated by said power supply means across one of the plasma ignition plugs according to a predetermined ignition order so that an insulation breakdown occurs in the plasma ignition plug due to a spark discharge in response to the application of the first high DC voltage at every ignition timing; and

(c) a second switching unit for applying the second high DC voltage across the same plasma ignition plug that is responsive to the first high DC voltage, the second high DC voltage being applied to the plug while the first high voltage is applied to the plug and after the first high voltage is initially applied to the plug by a predetermined time delay so as to provide plasma ignition energy of the generated second high DC voltage for the plasma ignition plug, the supply of plasma ignition energy being effectd only while the engine speed is lower than a predetermined speed.

4,448,182

IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINES

Jun Aoyama, and Noboru Nakayama, both of Okazaki, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Sep. 10, 1980, Ser. No. 185,920

Claims priority, application Japan, Sep. 10, 1979, 54-115871

Int. Cl.³ F02P *3/04*

U.S. Cl. 123—605 **5 Claims**

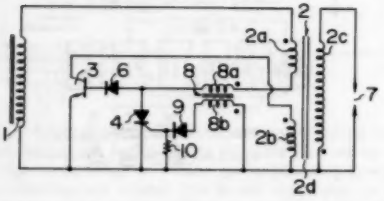
1. An ignition system for internal combustion engines comprising:

a generating coil incorporated in a magneto for generating a primary current;

an ignition coil including a primary winding connected to said generating coil to receive said primary current, an auxiliary winding electromagnetically coupled to said

primary winding and responsive to a magnetic flux produced by said primary current in said primary winding to generate an electromotive force, such that an electromotive force produced in said primary winding and said electromotive force produced in said auxiliary winding are mutually cancelled, and a secondary winding electromagnetically coupled to said auxiliary winding and said primary winding to generate an ignition high voltage;

transistor means having base, collector and emitter electrodes, said base electrode being connected to said primary winding of said ignition coil to cause flow of said primary current through a base-emitter path of said transistor means, the ends of said auxiliary winding being connected between said collector and emitter electrodes, whereby when said transistor means is non-conductive current flowing in said auxiliary winding is interrupted and the cancelling of said electromotive force produced in said primary winding is released so as to generate a high voltage in said secondary winding;



a thyristor connected to said base electrode of said transistor means and said primary winding, whereby said primary current from said primary winding is shunted so as to make said transistor means nonconductive; and

signal generating means connected to said semiconductor switching element so as to cause said shunting operation of said semiconductor switching element at a predetermined ignition time, said signal generating means including:

a transformer having a primary coil connected between said ignition coil primary winding and said transistor base electrode to pass said primary current therethrough, and a secondary coil electromagnetically coupled to said transformer primary coil and connected to a gate electrode of said thyristor so as to apply to said thyristor gate electrode an output voltage induced in response to the flow of said primary current through said transformer primary coil.

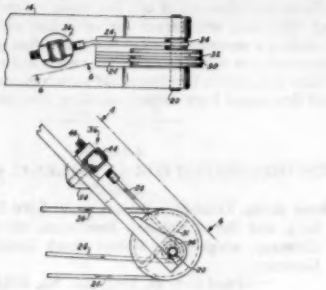
4,448,183

ADJUSTABLE CABLE ANCHORS FOR A COMPOUND BOW

Miguel A. Quartino, and Earl H. Hoyt, Jr., both of St. Louis County, Mo., assignors to Hoyt/Easton Archery Co., Bridgeton, Mo.

Filed Mar. 2, 1982, Ser. No. 353,965
Int. Cl.³ A41B 5/00
U.S. Cl. 124—24 R **3 Claims**

1. In a two-wheel type compound bow having two eccentric wheels mounted on shafts journalled in the outer ends of the bow limbs and wherein a pair of cables each having one end connected to one end of a bow string and extending therefrom over an adjacent eccentric wheel and thence along the belly side of the bow to an opposite end thereof to an anchored end; the improvement comprising a pulley mounted for rotation on each of said shafts for the friction free extension of the anchored end portions of said cables to the back side of said bow, and a screw threadedly adjustable anchoring device mounted on the back side of each bow limb, said anchoring devices each comprising a body member mounted in fixed position on the back side of a bow limb spaced from the outer end thereof, each of said body members having an upstanding portion with opposite sides and a smooth bore extending therethrough from side to side, a screw in said bore projecting from opposite sides of said upstanding portion and being guided for longitudinal movement in said bore, said screw having a cable end attached to one projecting end, a nut threadedly engaged on said other



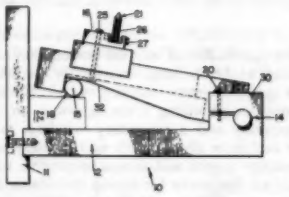
projecting end portion of said screw and abutting the adjacent side of said upstanding portion, and a low friction washer between said nut and said upstanding portion whereby said cables may be adjustably anchored without twisting by rotation of said nut.

4,448,184

SINE BAR GRINDING WHEEL DRESSER

Raymond W. Zmijewski, R.D. #7 Station Rd., Erie, Pa. 16510

Filed Feb. 5, 1982, Ser. No. 346,256
Int. Cl.³ B24B 53/12
U.S. Cl. 125—11 B **1 Claim**



1. A grinding wheel dresser comprising a base and a column supported on the base and extending upwardly therefrom and fixed thereto,

said column having two forwardly extending bosses fixed to its upper end,

an arm having a first end and a second end,

said base being fixed to said second end of said column and disposed generally perpendicular to said column and underlying said arm, said base having a lower surface adapted to rest on a magnetic table,

said first end of said arm being received between said bosses,

an axle extending through said bosses and through said first end of said arm,

a cylinder fixed to said arm adjacent said second end on the side thereof adjacent said column, said arm terminating adjacent said base and providing a space between said cylinder and said column to receive a gauge block resting on said base and against said column with said cylinder disposed against the block,

a T-shaped slot in the arm,

said T-shaped slot extending from said first end to a position adjacent said second end,

a slider having a follower received in said T-shaped slot and

sliding on the outer surface of said arm remote from said column,

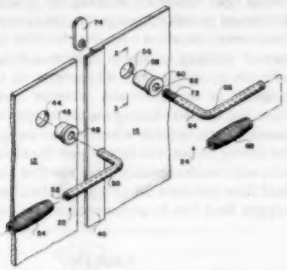
a diamond point on said slider adapted to engage a wheel to be dressed whereby said slider can be slid up and down on said arm to move said diamond point in a path disposed at an angle to the vertical determined by the thickness of said gauge block.

4,448,185

AIR COOLED DOOR HANDLE FOR HEATERS

Carrol E. Buckner; Clarence G. Cook, both of Weaverville, and Thomas J. Kane, Asheville, all of N.C., assignors to Buck Stove Corporation, Asheville, N.C.

Filed Jan. 4, 1979, Ser. No. 943
Int. Cl.³ F23M *7/00*
U.S. Cl. 126—193 **20 Claims**



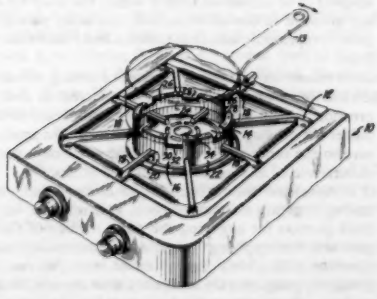
1. In a heating unit having a firebox, a flue port, an access opening in a front, closure means for covering said access opening and a handle mounted to said closure means for manipulating said closure means to cover and uncover said access opening, the improvement being said handle comprising a duct means interior to said handle for supplying air from the exterior of said firebox to the interior of said firebox, through said duct means, when said closure means covers said access opening.

4,448,186

DEVICE FOR INCREASING THE EFFICIENCY OF COOKING ON GAS STOVES

George E. K. Smith, 163 E. 81st St., New York, N.Y. 10028

Filed Oct. 21, 1981, Ser. No. 313,382
Int. Cl.³ F24C *15/10*
U.S. Cl. 126—215 **2 Claims**



1. A device for controlling the venting of a flame provided by a burner with support prongs of a gas stove in combination with a cooking utensil comprising:

collar means positioned proximate the burner of said stove and having a plurality of peripherally disposed first venting means;

mating means attached to and projecting from said utensil and rotatably mating with said collar means to enable (a) rotation and adjustment of the mating means by rotating the utensil during the cooking operation with the burner operative and (b) the removal of the pan and the mating means from the burner during the cooking operation to facilitate visibility and adjustment of the flames;

means for attaching said collar means to the burner support prongs of said stove; and

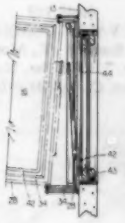
peripherally disposed second venting means on said mating means for aligning with said first venting means of said collar means whereby rotation of said utensil and said mating means controls the venting of the flame of said stove.

4,448,187

DEVICE FOR HEATING ABSORBENT SURFACES WITHIN AN ENCLOSED SPACE WITH SOLAR THERMAL RADIATION

Leon Stulken, Rte. 2, Hastings, Nebr. 68901

Filed May 17, 1982, Ser. No. 378,692
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—417 **12 Claims**



1. A device for heating absorbant surfaces within an enclosed space with solar thermal radiation, comprising:

an enclosure having an opening with a generally east or west orientation formed in a wall thereof;

a frame means mounted to the exterior wall of said enclosure adjacent to the north side of the opening, at an angle such that the plane in which the frame lies intersects with the plane in which the opening lies at a line which forms an angle with a generally vertical line at the north side of the opening, the intersecting line bearing north from the point it intersects with said vertical line; and

a reflecting surface supported by said frame means whereby the sun's rays are reflected upwardly and inwardly through said opening when the sun is south of the opening.

4,448,188

METHOD FOR PROVIDING AN OXYGEN BEARING LIQUID TO A BLOOD VESSEL FOR THE PERFORMANCE OF A MEDICAL PROCEDURE

Marvin P. Loeb, Chicago, Ill., assignor to Laserscope, Inc., Arlington Heights, Ill.

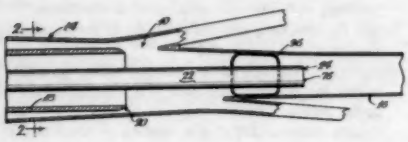
Filed Feb. 18, 1982, Ser. No. 349,718
Int. Cl.³ A61B *1/06*
U.S. Cl. 128—6 **30 Claims**

20. A method of treating a site in a blood vessel with laser irradiation, the method comprising the steps of:

(a) positioning within the blood vessel, proximate the site, the distal end of a conduit carrying a viewing system and means for emitting laser irradiation from the distal end of the conduit;

(b) temporarily occluding the blood vessel upstream of the of the site;

(c) introducing downstream of the produced occlusion and about the site a physiologically compatible liquid, from an external source, bearing sufficient available oxygen to maintain the viability of tissue downstream of the occlusion while the blood vessel is occluded;



(d) positioning the distal end of the conduit adjacent the site such that the site can be viewed through the viewing system when the physiologically compatible oxygen bearing fluid is substantially clear; and

(e) transmitting laser light through the conduit to subject the site with laser irradiation when the physiologically compatible oxygen bearing is sufficiently transparent to laser energy.

4,448,189

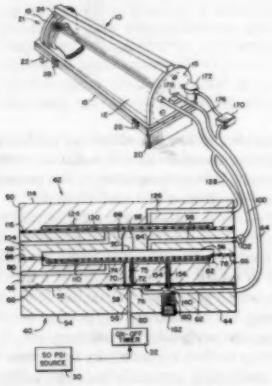
FLUIDIC VALVE COMBINATION

Robert A. Lasley, 508 Sentinel Rd., Moorestown, N.J. 08057

Filed Apr. 7, 1982, Ser. No. 366,340

Int. Cl.³ A61H *9/00*

U.S. Cl. 128—25 R **6 Claims**



1. A low pressure hyperbaric device adapted for use in conjunction with a pressure source of oxygen for treatment of a patient including a chamber having an entrance adapted to allow the introduction of a body part, means associated with the entrance to seal the body part thereto and thereby provide an air tight chamber, timing means for controlling treatment time connected in series with the pressure source of oxygen, said timing means including an on-off valve for starting and stopping oxygen flow, an oxygen feed line in fluid communication with the chamber, said oxygen feed line having an oxygen flow control means therein, an exhaust valve in fluid communication with the chamber, said exhaust valve being in fluid communication with the oxygen feed line whose pressure maintains the exhaust valve in the closed condition, a first pressure line in fluid communication with the chamber, said first pressure line having a one way valve therein set to allow flow from the chamber at a prescribed pressure, a second pressure line in fluid communication with the chamber, and a fluidic valve means operatively associated with the aforementioned apparatus, said fluidic valve means comprising

an inlet flow valve having an inlet and an outlet, the inlet being fluidly connected to the timing means, the outlet being fluidly connected to the oxygen feed line in communication with the chamber, closure means for closing said outlet,

power means connected to the first pressure line via said one way valve for closing said closure means when fluid flows in the first pressure line upon attainment of the prescribed chamber pressure,

a first vent means for venting the oxygen feed line to atmosphere, the aforesaid power means simultaneously opening the first vent means to atmosphere with the closure of the closure means for the outlet of the inlet flow valve, the decrease in pressure in the oxygen feed line allowing the exhaust valve to open to vent the chamber to atmosphere,

a second vent means for venting the power means,

and pressure means connected to the second pressure line in fluid communication with the chamber for controlling the second venting means in response to chamber pressure wherein upon the loss of pressure in the chamber, the pressure in the aforesaid pressure means decreases to allow the second venting means to open to vent the power means to atmosphere whereby the oxygen pressure from the timing means will force open the closure means for the inlet and simultaneously close the first vent means to open fluid flow between the outlet and the chamber through the oxygen feed line to commence a new cycle.

4,448,190

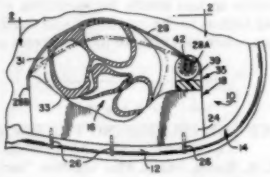
CONTROL SYSTEM FOR BODY ORGANS

Maynard L. Freeman, 5469 Ranier Dr., Lisle, Ill. 60532

Continuation-in-part of Ser. No. 34,224, Apr. 30, 1979, Pat. No. 4,304,225. This application Jul. 20, 1981, Ser. No. 285,302

Int. Cl.³ A61H *31/00*

U.S. Cl. 128—60 **8 Claims**



1. A body organ control system, comprising:

auxiliary pumping means including compression means adapted to be implanted totally within the body for applying pressure to the outer surface of a body part to compress it repeatedly and thus to force body materials therefrom;

control means for producing a series of timing pulses;

electrical force-producing means connected to said compression means and responsive to said series of timing pulses for causing said compression means to apply pressure to the outer surface of the body part only upon the occurrence of individual ones of said pulses;

said compression means including a compression member having a gently curved contour, said member having a thick portion for engaging the outer surface of the body part and for applying progressively-increasing external pressure to the body part to cause it to deform over a gradually progressively increasing area thereof during the applying of pressure to the body part by said compression means wherein the body part is the aorta and said compression means includes support means adapted to be fixed directly to and to engage directly another internal body part of the body near said aorta, said support means having a rear wall adapted to be secured to the aorta body,

fastening means adapted for attaching fixedly said support means directly to and in engagement with said another internal body part disposed within the body for anchoring purposes, elongated strap means connected at its ends to said support means to cooperate with said rear wall of said support means to receive the aorta for applying pressure thereto, and said force producing means applying force repeatedly to said strap means to tension it repeatedly and thus to cause said pressure to be applied repeatedly to the surrounded outer part of the aorta against said support means.

4,448,191

IMPLANTABLE CORRECTANT OF A SPINAL CURVATURE AND A METHOD FOR TREATMENT OF A SPINAL CURVATURE

Lazar I. Rodnyansky, ulitsa Karla Marxa, 133, kv. 47, and Viktor K. Gupalov, ulitsa Gorkogo, 24, kv. 6, both of Krasnoyarsk, U.S.S.R.

Filed Jul. 7, 1981, Ser. No. 281,165
Int. Cl.³ A61F 5/00, 5/04
U.S. Cl. 128—69 **20 Claims**

1. An implantable correctant of a spinal curvature, comprising:

a rod of a generally rectangular cross section, shaped in an arc, positioned on one side of the spinous processes with the convexity of the rod facing the convexity of the spine; and

a tension fixation device mounted on the spine, said device straightening said rod and said spine to correct said spinal curvature.

4,448,192

MEDICAL VENTILATOR DEVICE PARAMETRICALLY CONTROLLED FOR PATIENT VENTILATION

Frederick A. Stawitcke; William J. Mordan, both of Sunnyvale; Holly B. Jimison, Palo Alto; Robert Piziali, Stanford, and Allen K. Ream, Woodside, all of Calif., assignors to Hewlett Packard Company, Palo Alto, Calif.

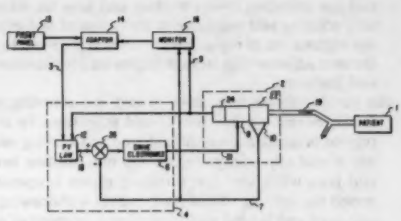
Filed Mar. 5, 1982, Ser. No. 354,993
Int. Cl.³ A61M 16/00
U.S. Cl. 128—204.26 **9 Claims**

1. A ventilator for regulating respiration gas, comprising:

a source for transfer of respiration gas in response to a regulatory signal;

measuring means coupled to said source for measuring pressure and volume of said respiration gas being transferred by said source and for providing a pressure signal and a volume signal to represent same; and

regulator means coupled to said measuring means and said source (a) for generating a pressure target from comparison of said volume signal with a pressure-volume control law, having a predetermined constant term (b) for comparison of said pressure target with said measured pressure signal, and (c) for generation of said regulatory signal to regulate, in response to said comparison of said pressure



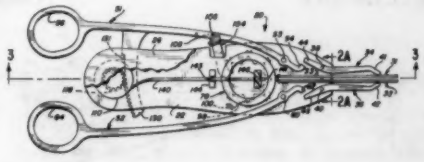
target, the pressure of said respiration gas in accordance with said pressure-volume control law.

4,448,193

SURGICAL CLIP APPLIER WITH CIRCULAR CLIP MAGAZINE

Konstantin Ivanov, Edison, N.J., assignor to Ethicon, Inc., Somerville, N.J.

Filed Feb. 26, 1982, Ser. No. 352,836
Int. Cl.³ F16B 2/10; A61B 17/12
U.S. Cl. 128—326 **18 Claims**



18. A medical instrument for applying a plurality of ligating clips seriatim about tissue wherein each said clip is initially provided in an open state, each said open clip comprising first and second legs joined at a leg connection end of the clip and being spaced apart at their distal ends, said instrument comprising:

a frame;

first and second jaws mounted to said frame in confronting relationship for movement away from each other into an open position to receive one of said clips and toward each other into a closed position for closing said one clip;

jaw biasing means for biasing said jaws outwardly away from each other from said closed position and into said open position;

jaw actuating means for being operated to permit the movement of said jaws away from each other into said open position under the influence of said jaw biasing means and for being operated through a lost motion phase to effect movement of said jaws toward each other from said open position into said closed position following the termination of said lost motion phase;

a magazine and means for mounting said magazine on said frame for rotation relative to said frame, said magazine defining a plurality of clip storage regions arranged in a generally circular array, each said clip storage region defining an inner access opening at an inner radius of said circular array and an outer access opening at an outer radius of said array, each said clip storage region being adapted to hold one of said clips with the leg connection end of said clip adjacent said inner access opening and with said clip leg distal ends adjacent said outer access opening;

means carried on said frame for releasably retaining said magazine against inadvertent rotational movement after said magazine has been rotated to align any one of said

magazine clip storage regions with said first and second jaws;

magazine rotating means responsive to the operation of the said jaw actuating means to close said jaws for incrementally rotating said magazine to move one of said clip storage regions out of registration with said jaws and to move the next adjacent clip storage region into registration with said jaws; and

clip pushing means responsive to said jaw actuating means for (1) advancing into one of said magazine clip storage regions in registration with said jaws and moving said clip out of said clip storage region and into position between said jaws when said jaw actuating means is operated to permit the opening of said jaws, and (2) withdrawing from said jaws and behind said inner access opening of one of said clip storage regions in registration with said jaws as said jaw actuating means is operated through said lost motion phase prior to the closure of said jaws.

4,448,194

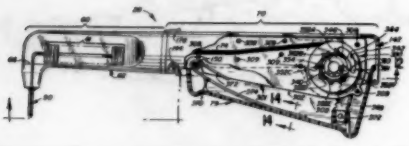
FULL STROKE COMPELLING MECHANISM FOR SURGICAL INSTRUMENT WITH DRUM DRIVE

John DiGiovanni, Irvington; Szabolcs M. Vigh, Woodbridge, both of N.J.; William P. McVay, Clearwater, Fla., and Anthony S. Miksza, Jr., Jersey City, N.J., assignors to Ethicon, Inc., Somerville, N.J.

Filed Feb. 3, 1982, Ser. No. 345,308

Int. Cl.³ A61B *17/00, 17/12*

U.S. Cl. 128—334 R **7 Claims**



1. An actuating mechanism for a hand-operated surgical instrument for applying a plurality of fasteners to tissue, said instrument having at least one moveable operating member, said actuating mechanism comprising:

a drum mounted for rotation relative to said instrument; said drum including an arm biased to a neutral position and including a laterally projecting pin extending from said arm; said arm adapted to be moved radially inwardly and radially outwardly relative to the axis of rotation of said drum;

a flexibe pusher member engaging, extending from, or functioning as said operating member; said flexible pusher member being secured to said drum for being wound at least partially around the circumference of said drum;

means for guiding said flexible pusher member for reciprocating movement adjacent said drum;

means for rotating said drum in a first direction for unwinding said flexible pusher member from said drum to move said flexible pusher member relative to said instrument from a retracted position to an extended position for effecting movement of said operating member;

means for rotating said drum in a second direction to return said flexible pusher member to said retracted position; and

an array of fixed teeth adjacent said drum and extending generally in a circular arc about an axis coincident with the axis of rotation of said drum; said teeth having an exterior tooth surface for engaging said laterally projecting pin and deflecting said pin and arm radially outwardly when said drum is rotated in said first direction; said teeth defining an inner camming surface for deflecting said pin and arm radially inwardly and permitting rotation of said drum in said second direction only after said pin has been rotated in said first direction past the end of said circular arc array of ratchet teeth.

4,448,195

REINFORCED BALLOON CATHETER

Harry H. LeVeen, 321 Confederate Cir., Charleston, S.C. 29407; Eric G. LeVeen, 3-3 Woodlake Rd., Albany, N.Y. 12203, and Robert F. LeVeen, 312 Lombard St., Philadelphia, Pa. 19147

Filed May 8, 1981, Ser. No. 261,810

Int. Cl.³ A61M *29/02*

U.S. Cl. 128—344 **7 Claims**

1. An expandable balloon catheter comprising an elongate flexible cylindrical tube having proximal and distal ends, said tube defining an inflation lumen means within said tube, said lumen means being sealed at said distal end and open at said proximal end of said tube, said tube including a unitary balloon portion adjacent to and spaced apart from said distal end, said balloon portion of said tube being thinner than the remaining portion of said tube, and a woven reinforcing structure combined with said remaining portion of said tube, said woven reinforcing structure overlapping opposite ends of said balloon portion to reinforce the remaining portion of the tube onto the balloon portion.

4,448,196

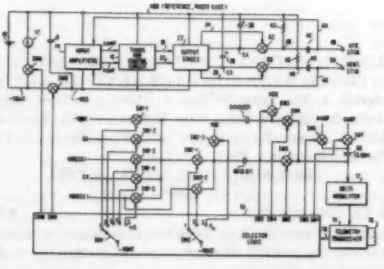
DELTA MODULATOR FOR MEASURING VOLTAGE LEVELS IN A HEART PACER

David K. Money, Pennant Hills, and Tibor A. Nappholz, Drummoyne, both of Australia, assignors to Telectronics Pty. Ltd., Lane Cove, Australia

Filed Jun. 30, 1982, Ser. No. 393,801

Int. Cl.³ A61N *1/36*

U.S. Cl. 128—419 PT **30 Claims**



1. An implantable medical prosthetic device having means for sensing a physiological signal to be monitored; and means for deriving from a sensed signal a continuous sequence of bit samples, an excess of one of the two states of said bit samples representing a change in a corresponding direction in the sensed signal; characterized by means for sampling an operating potential whose level is to be measured; and means for applying the sampled potential to the input of said bit-sample deriving means.

4,448,197

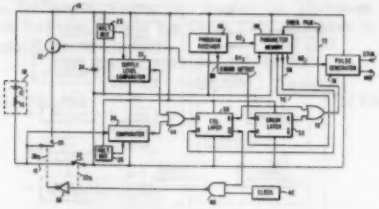
HEART PACER END-OF-LIFE DETECTOR

Tibor A. Nappholz, Drummoyne; David K. Money, Pennant Hills; Stephen Swift, Hornsby, and Ronald C. Bradbury, Marsfield, all of Australia, assignors to Telectronics Pty. Ltd., Lane Cove, Australia

Filed Jul. 22, 1982, Ser. No. 401,013

Int. Cl.³ A61N 1/36

U.S. Cl. 128—419 PT **11 Claims**



1. A programmable heart pacer comprising a power source, a pulse generator for generating pacing pulses, means for storing externally-generated parameter values and for controlling the operation of said pulse generator in accordance with the stored parameter values, and means for detecting the approach of the end of life of said power source and in response thereto for storing in said storing means predetermined parameter values, said detecting means including means for selectively connecting a test current source across said power source and means for comparing with a reference value the potential across said power source when a test current flows therethrough, characterized by said storing means further storing a variable test current source magnitude parameter value, and means for controlling the magnitude of said test current source in accordance with the stored test current source magnitude parameter value.

4,448,198

INVASIVE HYPERTHERMIA APPARATUS AND METHOD

Paul F. Turner, North Salt Lake, Utah, assignor to BSD Medical Corporation, Salt Lake City, Utah

Continuation of Ser. No. 50,050, Jun. 19, 1979, abandoned. This application Sep. 24, 1981, Ser. No. 305,180

Int. Cl.³ A61N 5/02

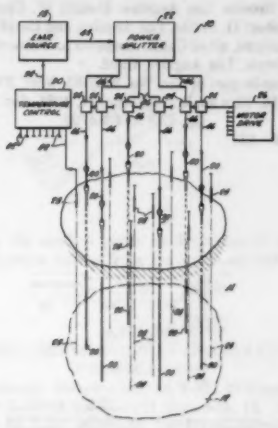
U.S. Cl. 128—422 **11 Claims**

1. Electromagnetic hyperthermia apparatus for heating local regions within body tissue comprising:

(a) a source of electromagnetic radiation;

(b) a plurality of electromagnetic energy radiating applicators, wherein said applicators are inserted into the body tissue in a preselected pattern, and further wherein said applicators are substantially parallel; and

(c) means interconnected between the radiation source and each of said applicators for continuously providing each said applicator with electromagnetic energy having the same frequency and preselected relative phase and power relationships, wherein the radiation emitted by said applicators undergoes constructive interference in the local region to be heated.



4,448,199

ELECTRODE FOR DETECTING BIOELECTRICAL SIGNALS

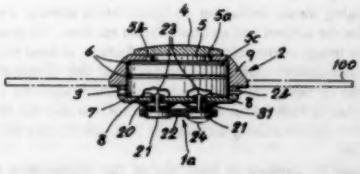
Walter Schmid, Fuchsweg 9, D-7911 Pfaffenhofen, München, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 142,741, Apr. 22, 1980, Pat. No. 4,375,219. This application Feb. 24, 1982, Ser. No. 351,870

Claims priority, application Fed. Rep. of Germany, Feb. 5, 1980, 3004126

Int. Cl.³ A61B 5/04

U.S. Cl. 128—639 **6 Claims**



1. An electric assembly for skin-contacting bioelectrical purposes, comprising:

a support;

a pair of electrodes mounted on and insulated from one another by said support, said electrodes having side-by-side contact surfaces adapted to rest directly against the skin, terminals enabling electrical connection to the respective electrodes and means forming a respective p-n junction poled in the same direction as the p-n junction of the other electrode with respect to the skin between each contact surface and the respective terminal, each such means including a plate of p-conductive semiconductive material lying against a plate of n-conductive semiconductive material, said plates being parallel to the respective contact surface; and

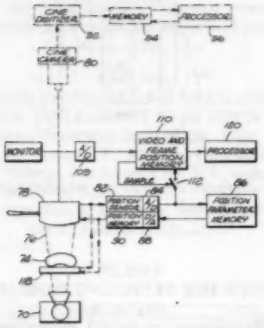
means for connecting said terminals of said electrodes to a device for monitoring bioelectric signals traversing said p-n junctions from the skin.

4,448,200

SYSTEM AND METHOD FOR DYNAMIC BACKGROUND SUBTRACTION

Samuel H. Brooks, Los Angeles; Donald W. Crawford, Long Beach; Robert H. Selzer, Los Angeles, and David H. Blankenhorn, Pasadena, all of Calif., assignors to University of Southern California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 890,103, Mar. 27, 1978, Pat. No. 4,263,916. This application Apr. 27, 1981, Ser. No. 258,132
Int. Cl.³ A61B 6/00
U.S. Cl. 128—653 31 Claims



1. An image acquisition system for generating a subtracted image motion picture of a selected feature of a biological subject comprising:

imaging means including an illumination source, a support for the subject and an illumination receiver, for generating an image of the selected subject feature, at least one of the illumination source, the support and the illumination receiver being movable by an operator whereby there is relative movement between the subject and the illumination receiver along an imaging path selected by the operator;

means for causing at least one of the illumination source, support and illumination receiver to move so that the relative movement between the subject and the illumination receiver is along the imaging path to duplicate said imaging path;

means for generating and storing a sequence of first frames of the image to define a first motion picture as the operator causes relative movement between the subject and the illumination receiver to define the imaging path and a sequence of second frames of the image to define a second motion picture as the relative movement between the subject and the illuminating receiver along the imaging path is duplicated;

means for aligning and registering the first motion picture and the second motion picture on a frame-by-frame basis; and

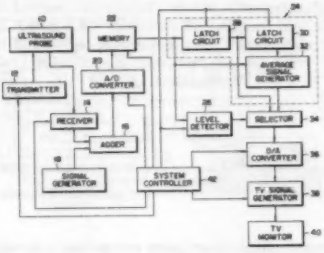
means for subtracting the aligned second motion picture from the first motion picture on a frame-by-frame basis for generating a subtracted image motion picture of the subject as the relative movement between the illumination receiver and the subject occurs along the imaging path.

4,448,201

DIGITAL SCAN CONVERTER

Kenzo Matsumoto, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Oct. 26, 1981, Ser. No. 315,154
Claims priority, application Japan, Oct. 27, 1980, 55-150311
Int. Cl.³ A61B 10/00
U.S. Cl. 128—660 9 Claims



1. A digital scan converter comprising:

means for adding a signal of a predetermined value to an image signal obtained by sector scanning an object;

means, whose address is specified by orthgonal coordinates, for storing an output signal from said adding means in the address specified by the orthogonal coordinates corresponding to polar coordinates at which the image signal is obtained;

means for reading out a signal from said storing means by linear scanning;

means for detecting the level of the signal read out from said storing means; and

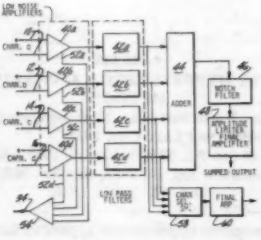
interpolating means for converting the signal read out from said storing means into an interpolating signal in response to tne output signal from said detecting means.

4,448,202

BIOLOGICAL SIGNAL AMPLIFIER SYSTEM WITH NOISE LEVEL REDUCTION

Waldemar J. Wajszczuk, 4489 Patrick, West Bloomfield, Mich. 48033; Tadeusz Palko, Gorlicka, 15 A m 10, and Grzegorz Pawlicki, Prosta 2/6, both of Warsaw, Poland

Filed Apr. 26, 1982, Ser. No. 371,710
Int. Cl.³ A61B 5/04
U.S. Cl. 128—709 7 Claims



7. An amplifier system for displaying a biological signal voltage from a body surface, comprising:

a plurality of leads coupled to the body surface at closely spaced locations, all of which produce the same signal voltage,

a plurality of amplifiers each having its input coupled with a different one of said leads for amplifying said signal voltage,

a summing circuit having a plurality of inputs each being coupled with the output of a different one of said amplifier for adding the amplified signal voltages,

and display means coupled with the output of the summing circuit for graphically displaying the time variation of said signal voltage.

4,448,203

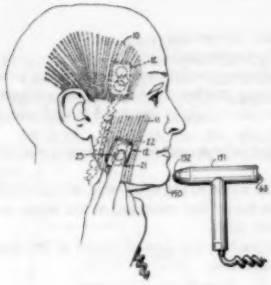
ELECTROMYOGRAPHIC DIAGNOSTIC DEVICE

Eugene Williamson, Evans, Ga.; Stephen M. Thompson, and Derek K. Evans, both of San Diego, Calif., assignors to "A" Company, San Diego, Calif.

Filed Sep. 24, 1982, Ser. No. 422,927

Int. Cl.³ A61B *5/04*

U.S. Cl. 128—733 **11 Claims**



1. Apparatus for sensing the Silent Period of masticatory muscles comprising:

electrode means adapted for contact with the skin overlying a masticatory muscle for sensing electrical activity of said muscle;

first means connected to said electrode means and providing an electrical signal representative of the sensed electrical activity;

second means receiving said representative electrical signal for sensing the onset of a Silent Period;

third means receiving said representative electrical signal and communicating with said second means for rejecting a Silent Period having a duration less than a predetermined time interval;

fourth means communicating with said second means and said third means for determining the duration of any Silent Period longer than said predetermined time interval; and

display means for indicating the duration of any such Silent Period so determined.

4,448,204

LIQUID CRYSTAL INFILTRATION SENSING SYSTEM

Joseph Lichtenstein, Colonia, N.J., assignor to Whitman Medical Corporation, Clark, N.Y.

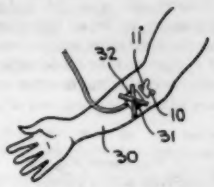
Division of Ser. No. 137,741, Apr. 7, 1980, Pat. No. 4,378,808. This application Sep. 24, 1982, Ser. No. 423,205

Int. Cl.³ A61B *5/00*

U.S. Cl. 128—736 **11 Claims**

11. A method of monitoring temperature change of a substance in a body at a surface of the body which is not in direct contact with the substance by adhering a patch of liquid crystal material to said surface, said liquid crystal material having a variable color versus temperature characteristic wherein the material remains at one color over a pre-determined range of temperatures and varies from that color when the temperature of the patch varies outside said pre-determined range, said method comprising the steps of:

providing a prescribed area on said patch which is permanently colored at said one color; and



observing the applied patch to determine if the variable color portion differs from the color of said prescribed area.

4,448,205

DEVICE FOR TAKING SAMPLES OF CELLS FROM THE CERVIX UTERI

Björn G. Stenkvist, Döbelnsgatan 13, S-752 37 Uppsala, Sweden

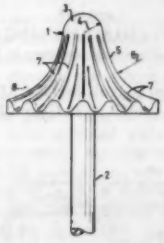
PCT No. PCT/SE81/00198, 371 Date Feb. 18, 1982, 102(e) Date Feb. 18, 1982, PCT Pub. No. WO82/00090, PCT Pub. Date Jan. 21, 1982

PCT Filed Jun. 30, 1981, Ser. No. 355,589

Claims priority, application Sweden, Jul. 8, 1980, 8005022

Int. Cl.³ A61B *10/00*

U.S. Cl. 128—749 **3 Claims**



1. Device for taking samples of cells from the cervix, characterized in that it consists of a rod, a conical body having a concave undulated lateral surface and a hemispherical tip, said rod connected to the base of said conical body and extending coaxially with the longitudinal axis thereof, said undulated surface extending from the base of the conical body to the hemispherical tip, the base radius of the cone being 5–15 mm, the radius of the hemispherical tip being 2–4 mm, the radius of the arc defining the concave lateral surface of the conical body being less than 50 mm and the undulated lateral surface approximately defining in cross-section taken through an imaginary conical section normal to said surface and the apex of which lies on the longitudinal axis of the conical body, a sine curve with decreasing wavelength and amplitude along the circular arc approaching the tip, the wavelength and amplitude being between 1.5 and 5 mm at the base of the cone.

4,448,206

VENTED, ASPIRATING SYRINGE

Michael D. Martell, 7555 Jurupa Ave., #E, Riverside, Calif. 92504

Continuation-in-part of Ser. No. 293,662, Aug. 17, 1981, Pat. No. 4,373,535. This application Dec. 13, 1982, Ser. No. 449,560

Int. Cl.³ A61B *5/00*

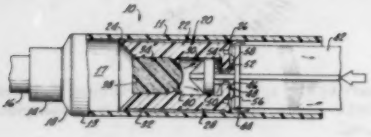
U.S. Cl. 128—765 **17 Claims**

1. A syringe assembly comprising:

a tubular body open at one end and being adapted to receive a hypodermic needle at the other end thereof;

a plunger, one end of which is adapted for insertion into said tubular body through said open end, said plunger having a longitudinal passageway for air flow therethrough;

means for forming a fluid-tight seal between the outside surface of said plunger and the inside surface of said tubular body; an air permeable filter member extending across said passageway adjacent said one end of said plunger;



a handle movably connected to the plunger to move the plunger within said tubular body; and

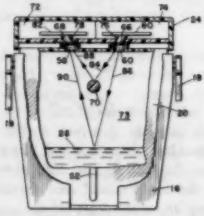
said handle and plunger having mutually interengaging means forming valve means extending across said passageway between said filter member and said open end of said tubular body for selectively permitting the passage of air through said passageway, said valve means including relatively movable parts on said handle and plunger.

4,448,207

MEDICAL FLUID MEASURING SYSTEM

John H. Parrish, La Jolla, Calif., assignor to Vital Metrics, Inc., San Diego, Calif.

Filed Nov. 3, 1981, Ser. No. 317,611
Int. Cl.³ A61B *5/00*; G01F *23/28*
U.S. Cl. 128—771 **18 Claims**



1. A medical system for measuring liquids discharged from a patient's body comprising:

housing means,

a substantially rigid wall container removably mounted in the housing means for collecting liquid discharged from said patient's body,

ultrasonic measuring means mounted in the housing means in operational relationship to the container and bacteriologically isolated from the interior of the container for measuring the distance to the surface of the liquid collected within the container,

control means for determining the volume of liquid collected in the container in a defined time interval in response to the output of the measuring means,

display means for visually indicating the volume of liquid collected in the container in a defined time interval as determined by the control means, and

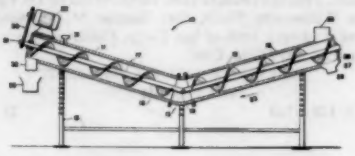
means for connecting the container to said patient's body to collect therein liquid discharged from said body.

4,448,208

TOBACCO EXTRACTOR

Hermann Friedrich, Avenches; Claude Ruf, Cortaillod, and Jacques Brosy, Neuchatel, all of Switzerland, assignors to Philip Morris Incorporated, New York, N.Y.

Filed Jan. 18, 1982, Ser. No. 340,399
Int. Cl.³ A24B *15/24*
U.S. Cl. 131—297 **3 Claims**



1. An extractor comprising:

a downwardly sloping inlet conduit;

an upwardly sloping outlet conduit connected to said downwardly sloping conduit at their lowest portions;

a worm conveyor coaxially mounted in said inlet and outlet conduit;

a plant material inlet mounted at the upper end of said inlet conduit;

a plant material outlet at the upper end of said outlet conduit;

an extract discharge line mounted at the upper end of said inlet conduit; and

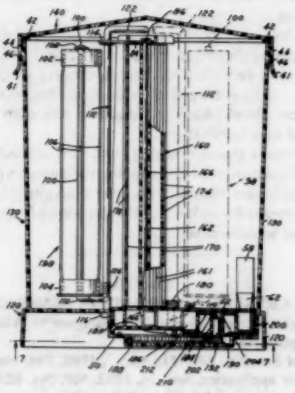
a wash liquid feed connection mounted at the upper end of said outlet conduit.

4,448,209

WASHER FOR PAINT ROLLERS

Erin J. Lindsay, 17855 Sharon Hollow La., Manchester, Mich. 48158

Filed Mar. 18, 1982, Ser. No. 359,203
Int. Cl.³ B08B *3/00*
U.S. Cl. 134—141 **13 Claims**



1. A washing apparatus for cleaning paint applicators of the roller type which comprises:

(a) a housing,

(b) an elongate rotatable roller mount for a paint roller to be cleaned mounted for rotation on a first axis in said housing,

(c) a washer cylinder mounted in said housing for rotation on a second axis parallel to and adjacent said first axis,

(d) means to rotate said washer cylinder and said rotatable roller mount simultaneously, and

(e) means to direct washing liquid to a paint roller on a roller mount to flush paint from said paint roller,

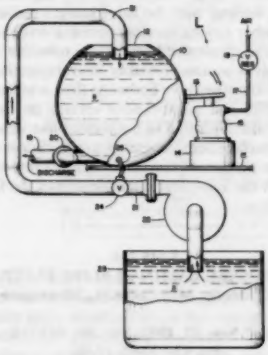
(f) said housing having a base, side walls and a cover at one end, and said means to rotate said washer cylinder comprising a pressure liquid operated turbine mounted in a turbine chamber in said base having an inlet port and outlet port, and a gear train driven by said turbine operatively connected to said washer cylinder to rotate said cylinder in response to introduction of liquid under pressure into said inlet port of said turbine chamber.

4,448,210

APPARATUS AND METHOD FOR CONTROLLING THE LEVEL OF A LIQUID IN A TANK

James W. Althouse, III, Tulsa, Okla., assignor to The Dow Chemical Company, Midland, Mich.

Filed May 20, 1983, Ser. No. 496,763
Int. Cl.³ F16K *21/18*; F17D *3/00*
U.S. Cl. 137—2 **2 Claims**



2. Method for controlling the level of a liquid in a tank, comprising the steps of:

fastening an air spring to a tank filled with a liquid, the tank has an access opening along its top surface, the tank has an outlet conduit which connects the bottom of the tank to a use point, and the outlet conduit has a swivel joint therein for swivel movement of the tank;

installing pressure regulator means for controlling flow of air into the air spring;

installing a conduit for delivering liquid into the tank, the delivery conduit has one end which extends into the tank through the access opening and an opposite end which connects into a source for the liquid;

installing a valve means in the delivery conduit and linking the tank to the valve with a valve operator means capable of opening and closing the valve in response to an upward and downward movement of the tank;

withdrawing the liquid from the tank through the outlet conduit, to cause the air spring to expand and swivel the tank upwardly until it reaches a first position in which the valve operator means opens the valve;

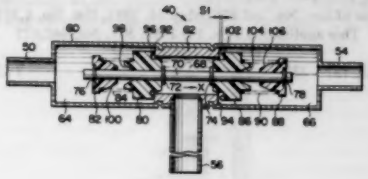
adding liquid to the tank through the delivery conduit, to cause the air spring to compress and swivel the tank downwardly until it reaches a second position in which the valve operator means closes the valve.

4,448,211

THREE-WAY VALVE

Syoichi Yoshida, Fuji, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 1, 1981, Ser. No. 326,205
Int. Cl.³ F16K *11/06*
U.S. Cl. 137—112 **7 Claims**



1. A three-way valve comprising:

a valve main body having a first valve chamber, one end of which is provided with a first inlet port, a second valve chamber, one end of which is provided with a second inlet port, a path for communicating the other end of the first valve chamber with the other end of the second valve chamber, a first valve seat disposed on the other end of the first valve chamber, a second valve seat disposed on the other end of the second chamber, and an outlet port communicating with said path;

a first main valve disposed within said first valve chamber and selectively movable between a first position in which the first main valve comes into contact with the first valve seat to seal the first valve chamber, a second position in which the first main valve is separated from the first valve seat by a first distance, and a third position in which the first main valve is separated from the first valve seat by a second distance greater than the first distance;

a second main valve disposed within said second valve chamber and selectively movable between a fourth position in which the second main valve comes into contact with the second valve seat to seal the second valve chamber, a fifth position in which the second main valve is separated from the second valve seat by a third distance, and a sixth position in which the second main valve is separated from the second valve seat by a fourth distance greater than the third distance; and

control means disposed within the valve main body for (a) moving the first main valve from the third position to the first position while simultaneously moving the second main valve from the fourth position to the fifth position when the pressure within the first valve chamber is greater than the pressure within the second valve chamber by a first value to thereby close the first valve chamber and establish communication between the second valve chamber and the outlet port, (b) moving the second main valve from the fifth position to the sixth position when the pressure within the first valve chamber is greater than the pressure within the second valve chamber by a second value greater than the first value to thereby separate the second main valve and the second valve seat greatly from each other, (c) moving the second main valve from the sixth position to the fourth position while simultaneously moving the first main valve from the first position to the second position when the pressure within the second valve chamber is greater than the pressure within the first valve chamber by a third value to thereby close the second valve chamber and establish communication between the first valve chamber and the outlet port; and (d) moving the first main valve from the second position to the third position when the pressure within the second valve chamber is greater than the pressure within the first valve chamber by a fourth value which is greater than the third

value to thereby separate the first main valve and the first valve seat greatly from each other.

4,448,212

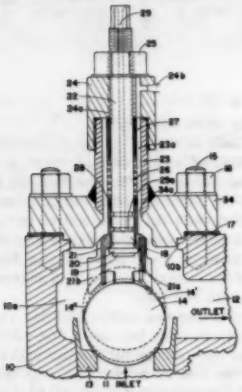
CHECK VALVE FOR USE WITH HIGH PRESSURE PUMP

Robert J. Rubey, Wisconsin Rapids, Wis., assignor to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 263,506, May 14, 1981, Pat. No. 4,393,895. This application Feb. 10, 1983, Ser. No. 465,677

Int. Cl.³ F16K *15/04*

U.S. Cl. 137—238 **7 Claims**



1. A check valve for use with a high pressure pump, said valve comprising:

a valve body having an inlet and an outlet and a fluid Passageway therebetween, said valve body having an opening therein on the opposite side of the valve body from said inlet, a cover mounted over said opening and having an aperture therein, and a limiter housing covering said aperture and extending away from said valve body;

a valve seat in said passageway between said inlet and said outlet;

a valve member in said passageway movable toward said valve inlet for seating against said valve seat for sealing said passageway against back flow of fluid therethrough;

a valve member lift limiter mounted on said valve body and having a valve member engaging end extending into the path of movement of said valve member for engaging said valve member and limiting movement of said valve member away from said valve seat, said valve member lift limiter having a stem extending through said housing and projecting out of said housing;

adjusting means mounted on said limiter housing and operably associated with said valve member lift limiter for adjusting the position of said valve member lift limiter foward and away from said valve seat;

a plunger slidably mounted on said valve member lift limiter for movement toward and away from said valve seat along an axis which is substantially coaxial with the axis of movement of said valve member lift limiter and in the position closest to said valve seat projecting past the valve member lift limiter toward said valve seat and having the end toward said valve member spaced from said valve member when said valve member is seated on said valve seat and having a sleeve extending into said housing; and

a coil spring positioned around said valve member lift limiter within said housing and engaging said sleeve for urging said plunger toward said valve member and permitting movement of said plunger away from said valve seat sufficiently far to permit said valve member to engage said valve member lift limiter.

4,448,213

WATER VALVE

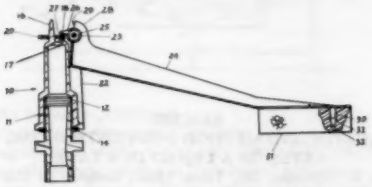
Frederic F. Seeley, St. Marys, Australia, assignor to F. F. Seeley Nominees Pty. Ltd., St. Marys, Australia

Filed Mar. 28, 1983, Ser. No. 479,643

Claims priority, application Australia, Mar. 29, 1982, PF3347

Int. Cl.³ F16K *31/18, 29/00*

U.S. Cl. 137—451 **8 Claims**



1. A float valve having walls defining a hollow valve body, a valve seat disposed exteriorly on one end of the body and defining an outlet orifice, a valve member locating spigot being disposed exteriorly of the valve body and adjacent the valve seat and being integral with the valve body, a resilient washer-like valve member having aperture forming walls surrounding and engaging the spigot and being freely rotatable thereabout, a float arm, pivot means pivotably interconnecting the float arm at a first end to the valve body, the float arm having a float at a second end, and an abutment surface on the first end engageable against a portion of the washer-like valve member, the abutment surface being operable to tilt, distort or both tilt and distort the portion of the valve member into sealable engagement with the valve seat upon hinging of the float arm in a given direction.

4,448,214

MULTI-CHANNEL LAMINAR-FLOW FLUID VALVE

Lawrence M. D'Alessio, 2426 Cedar St., Manasquan Park, N.J. 08736

Filed Nov. 22, 1982, Ser. No. 443,751

Int. Cl.³ F16K *11/02*

U.S. Cl. 137—625.46 **6 Claims**

1. A multi-channel, laminar-flow fluid valve comprising a first, circular, outer member; a second outer member; and a circular inner member; each of said members having a centrally-located pivot hole; a pivot pin extending through said centrally-located pivot holes; means on each end of said pivot pin to hold said members together in a rotatable condition; a continuous circular depression, concentric with said pivot pin, on the inner surface of said first outer member, a plurality of openings through said first outer member, equidistant from each other around said continuous circular depression; a plurality of ports, for connecting to tubes, aligned with said plurality of openings, on the outer surface of said first outer member; an inner and an outer circular ridge, concentric to said pivot pin, projecting from the surface of said inner member adjacent to said inner surface of said first outer member to engage an

inner and an outer edge of said continuous circular depresssion, respectively a plurality of smaller circular ridges projecting from the surface of said inner member between said inner and outer circular ridges, equidistant from each other and positioned to correspond with the location of said plurality of ports in said first outer member; an opening through said inner member in the center of one of said smaller circular ridges; a port, extending from the opposing side of said inner member and aligned with said opening through said inner member, to connect to a tube; an opening through said second outer member to contain said port of said inner member, said inner member being made of resilient material so that pressure exerted between said two outer members compresses said ridges along said edges of said depression and around said openings through said first outer member to provide a tight gasket.

4,448,215

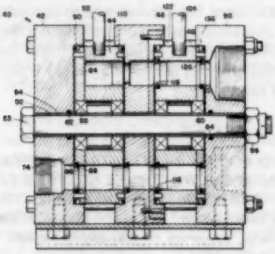
MULTIPLE FLOW CONTROL VALVE

Michael Skelly, 2505 Dogwood, Pampa, Tex. 79066

Division of Ser. No. 96,058, Nov. 20, 1979, Pat. No. 4,330,008, which is a continuation-in-part of Ser. No. 929,312, Jul. 31, 1978, Pat. No. 4,219,049. This application Jul. 6, 1981, Ser. No. 281,015

Int. Cl.³ F16K *11/06*; F15B *13/09*

U.S. Cl. 137—625.46 **8 Claims**



3. A multiple flow selector valve comprising a pair of spaced-apart first and second valve body members, a plurality of n fluid inlet ports provided in the first valve body member, a pair of outlet ports provided in the second valve body member, one being a power outlet, the other being an exhaust outlet, a third valve body member sealingly and movably interposed between said first and second valve body members and rotatably carried by the first and second valve body members about a longitudinal axis and wherein the inlet ports are radially spaced about said longitudinal axis, means carried by said third valve body member to operably connect $2n-1$ choices of flow rates from said inlet ports into open communication with the power outlet port of the second valve body member while simultaneously operably connecting any remaining inlet ports into open communication with the exhaust outlet port.

4,448,216

SUBSURFACE SAFETY VALVE

Steven C. Speegle, Flower Mound; Kenneth L. Schwendemann, Lewisville; Michael B. Vinzant, Carrollton; Robert W. Crow, Irving, and Cary G. Mondon, Carrollton, allof, Tex., assignors to Otis Engineering Corporation, Dallas, Tex.

Filed Mar. 15, 1982, Ser. No. 358,313

Int. Cl.³ F16K *31/163*

U.S. Cl. 137—630 **14 Claims**

1. A surface controlled subsurface safety valve having a ball type valve closure means for controlling fluid flow therethrough, comprising:

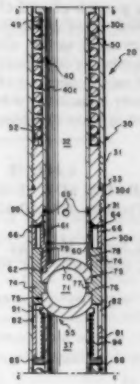
a. a housing means with a longitudinal passageway therethrough;

b. an operating sleeve and attached piston means slidably disposed within the longitudinal passageway;

c. the valve closure means disposed within the longitudinal passageway;

d. means for communicating control fluid pressure with the piston means;

e. means for connecting the valve closure means to the operating sleeve whereby longitudinal movement of the operating sleeve causes longitudinal movement of the valve closure means within the housing means;



f. biasing means which generates a force opposing longitudinal movement of the valve closure means in one direction; and

g. the biasing means causing longitudinal movement of a part of valve closure means in the other direction to permit fluid flow therethrough after any difference in fluid pressures on opposite sides of the valve closure means have been equalized.

4,448,217

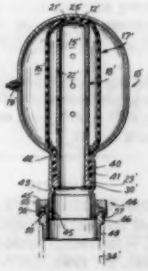
ACCUMULATOR HAVING BLADDER IN EXPANSION LIMITING CONTACT WITH CASING

Jacques H. Mercier, Stamford, Conn., assignor to The Normand Trust, New York, N.Y.

Filed Sep. 27, 1982, Ser. No. 424,363

Int. Cl.³ F16L *55/04*

U.S. Cl. 138—30 **10 Claims**



1. A low cost, hydraulic accumulator device comprising a pressure vessel having parti-spherical upper and lower end portions and a cylindrical section interposed between said end portions, a neck portion integral with and extending outwardly from said lower end portion, a rigid, hollow, generally cylindrical casing extending through said neck portion and into said

vessel, said casing have a closed upper end and an open lower end defining an oil port, said casing including a plurality of transversely directed throughgoing apertures in the cylindrical portion thereof, a resilient, deformable elastomeric bladder member mounted over the outer surface of and conforming to said casing and dividing said vessel into two chambers, said bladder member including a closed upper end portion, an open mouth portion at the lower end, and a thickened collar portion adjacent said mouth portion and surrounding said lower end of said casing, said collar portion being clampingly secured between said lower end of said casing and said neck of said vessel to define a seal, a portion of said closed end of said bladder being pressed between said upper end of said casing and said upper end of said pressure vessel, whereby the central portion of said bladder member is constrained against elongation and the center line of said upper end of said bladder member is retained substantially coincident with the longitudinal axis of said vessel and casing upon expansion thereof.

4,448,218

APPARATUS FOR SEALING LEAKS

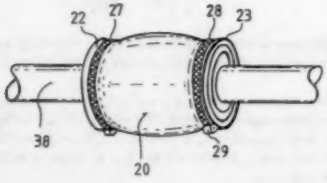
Manfred Vetter, Postfach 1260, D-5352 Zülpich, Fed. Rep. of Germany

Filed Jun. 5, 1981, Ser. No. 270,828

Claims priority, application Fed. Rep. of Germany, Nov. 28, 1980, 8031745[U]

Int. Cl.³ F16L *55/00*

U.S. Cl. 138—99 **10 Claims**



1. Patching apparatus for containers, pipes and similar objects, comprising in combination:

an inflatable pad with a non-elastic top layer and an attached flexible lower layer, with said lower layer having an attached external reinforced layer arranged in such a way that an U-shaped area of high elasticity is formed between said flexible lower layer and said external layer;

two tension straps;

four strips framing said pad, two of which are side strips disposed respectively along each of two longer sides of said pad and being adapted to the width of said straps for receiving said straps, one frontal cross strip at the frontal end of said pad, and one rear cross strip at the rear end of said pad; and

a small tube being connected through one of the strips selected from the group consisting of said side strips and said rear cross strip, said tube having valve means for connection to a pressure source.

4,448,219

HEAT-INSULATING PIPE ELEMENT

Hendricus W. M. van Hatten, Vlissingen, Netherlands, assignor to AMGAS B.V., Middleburg, Netherlands

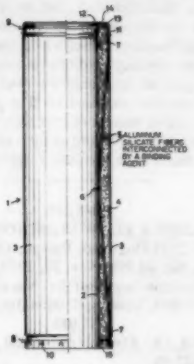
Filed Jan. 28, 1983, Ser. No. 461,946

Claims priority, application Netherlands, Jan. 28, 1982, 8200319

Int. Cl.³ F16L *9/22*

U.S. Cl. 138—149 **5 Claims**

1. A heat-insulating pipe element of a pipe for conveying flue gases, comprising, an elongated metal inner tube, an elongated metal outer tube surrounding said inner tube in spaced relation and coaxial therewith, said tubes defining an annular space therebetween, a continuous layer of insulating material, having a coherent, fibrous resilient structure, located within said annular space in contact with both said tubes for resiliently maintaining a coaxial relationship therebetween, at least one elongated connecting element disposed within said annular space



for securing said tubes together against relative axis movement, said element being connected to said tubes at only three locations and having only a central portion thereof connected with a central portion of said inner tube, and having only opposite end portions thereof connected with end portions of said outer tube.

4,448,220

METHOD FOR OPERATING A TWO-PHASE GRIPPER LOOM AND TWO-PHASE GRIPPER LOOM FOR PERFORMANCE OF THE METHOD

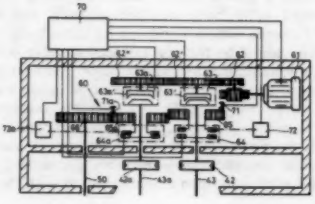
Rudolf Zwiener; Anton Lucian, and Ernst Gattiker, all of Arbon, Switzerland, assignors to Aktiengesellschaft Adolph Saurer, Arbon, Switzerland

Filed Dec. 4, 1981, Ser. No. 327,624

Claims priority, application Austria, Dec. 23, 1980, 6282/80

Int. Cl.³ D03D *51/02*

U.S. Cl. 139—1 E **10 Claims**



1. In a method of operating a two-phase gripper weaving machine containing two juxtapositioned loom units each having heald frames operated by a heald frame positioning device containing heald frame cam means and respectively movable into open shed and closed shed positions and a respective rotary shaft operatively correlated with each loom unit, the loom units working in phase opposition to one another and the rotary shafts being conjointly driven by a weaving machine main shaft, the improvement which comprises the steps of:

upon interruption of the weaving operation at any one of the loom units closing a still open weaving shed of both sheds of said loom units; and

prior to again placing into operation the weaving machine initially again opening the previously closed weaving shed

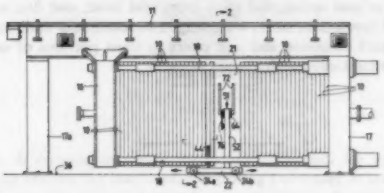
in order to place it back into the open shed position which it possessed prior to interruption in the weaving operation.

4,448,221

SPRAYING APPARATUS FOR CLEANING FILTER PLATES

James D. Murray, Birmingham, Ala., assignor to Passavant Corporation, Birmingham, Ala.

Filed Jun. 17, 1982, Ser. No. 389,178
Int. Cl.³ B08B *3/02*
U.S. Cl. 134—76 **6 Claims**



1. Spraying apparatus for cleaning filter plates of a filter press wherein said plates are adapted for separation along longitudinally extending horizontal guides to define a space between adjacent filter plates,

(a) a support frame mounted for longitudinal movement beneath said filter press and adapted for alignment with said space defined between adjacent filter plates to be cleaned,

(b) an elongated arm pivotally connected at one end to said support frame for pivotal movement thereon selectively to a first position beneath said filter plates to permit free longitudinal travel of said support frame beneath said filter press and to a second position with said elongated arm in alignment with and extending into said space so that upon movement of said elongated arm to said second position the other end thereof extends inwardly of said space toward the mid portions of said adjacent filter plates,

(c) a fluid supply conduit carried by said elongated arm and having an inlet adjacent said one end of said elongated arm connected to means supplying a cleaning fluid under pressure and having an outlet adjacent said other end thereof,

(d) an elongated spray dispenser mounted for rotation at one end to said other end of said elongated arm and adapted to rotate at least 360° within said space upon movement of said elongated arm to said second position, with said dispenser being rotatable in at least one direction to apply spray over the vertical surfaces of said adjacent filter plates being cleaned,

(e) actuator means carried by said support frame for pivoting said elongated arm to said first and said second positions, and

(f) means carried by said elongated arm for imparting rotation to said spray dispenser.

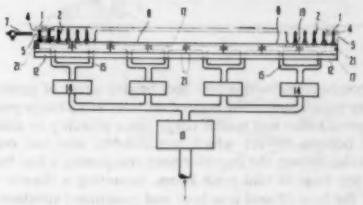
4,448,222

APPARATUS FOR MOUNTING WEFT GUIDING MEMBERS IN JET LOOMS

Hiroshi Arakawa, Kariya, Japan, assignor to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Aug. 7, 1981, Ser. No. 290,727
Claims priority, application Japan, Aug. 9, 1980, 55-109485
Int. Cl.³ D03D *47/30*
U.S. Cl. 139—435 **7 Claims**

1. In a jet-operated weaving machine including a main nozzle, a race on which are arranged a reed, a series of weft guides forming a weft guiding channel in a shed and a number of auxiliary nozzles provided adjacently along said series of weft guides for injecting therefrom fluid under pressure into said channel thereby to carry through said channel a weft yarn introduced into the shed by a jet stream from said main nozzle, apparatus for mounting said weft guides and said auxiliary nozzles, comprising a plurality of mounting blocks, a plurality of said weft guides and at least one of said auxiliary nozzles being mounted integrally on each of said mounting blocks, all of said series of weft guides and said number of auxiliary noz-



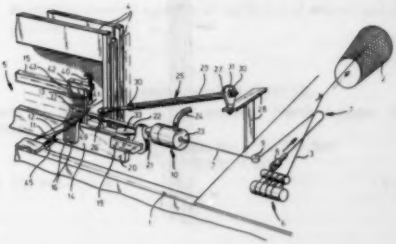
zles being mounted on said mounting blocks, said mounting blocks being arranged end-to-end in a row in substantially abutting relation and fixedly but individually removably mounted on and along said race, releasable means mounting said blocks on said race, each of said mounting blocks having formed therein a fluid passage communicating with each of said auxiliary nozzles thereon, fluid supply means, and means connecting said fluid passages to said fluid supply means.

4,448,223

DEVICE COMPRISING A MOVABLE NOZZLE FOR THE PNEUMATIC INSERTION OF THE WEFT IN A SHUTTLE-LESS LOOM

Albert H. Deborde, and Pierre L. Rémond, both of Bourgoin Jailleu, France, assignors to Saurer Diederichs (Societe Anonyme), Bourgoin Jailleu, France

Filed Dec. 17, 1981, Ser. No. 331,922
Claims priority, application France, Dec. 30, 1980, 80 27964
Int. Cl.³ D03D *47/36*
U.S. Cl. 139—435 **12 Claims**



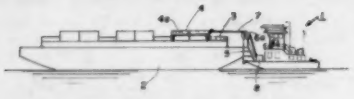
1. A device for the pneumatic insertion of a weft in a shuttle-less weaving loom having a sley with a sley sole, said device comprising a pneumatic insertion nozzle mounted to pivot on an extension of said sley sole about an axis perpendicular to said sley sole, a connecting rod separate from said nozzle and pivotally connected to said nozzle and to a fixed point of the loom at spaced apart locations along the length of the rod so that the nozzle has a position parallel to the sley sole during the insertion of the weft thread, but forms an angle with respect to the longitudinal direction of the sley sole in a beating-up position of the sley.

4,448,224

TUG BOAT COVER ROLLING APPARATUS

Frank M. Crain, Box 105, Shippingport, Pa.

Filed Sep. 23, 1981, Ser. No. 304,851
Int. Cl.³ B63B 35/70
U.S. Cl. 114—242 2 Claims



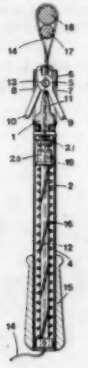
1. In combination with a tow boat having a pair of vertically extending push knees at the bow of the boat and a barge pushed by said push knees and which barge has a plurality of slidable top and bottom covers which are slidable into and out of nesting relationship, the improvement comprising a bar, bridging the top ends of said push knees, mounting a sheave centrally of the bow of said tow boat and positioned substantially at the height of said covers, a winch mounted centrally in the bow portion of said tug boat for pulling on a cable entrained about said sheave and having a free end connected to one of said covers, said sheave being mounted on top of said bar and being at a height substantially that of said covers, whereby the winch will selectively pull said covers along a central longitudinal axis to prevent twisting movements of said covers.

4,448,225

TOOL TO SUPPLY, TWIST AND CUT ENDS OF A METAL WIRE OR PLASTIC FILAMENT TO PROVIDE A FASTENER

Daniel Schmidt, 8, avenue du Petit-Lancy, Petit-Lancy, Switzerland

Filed May 24, 1982, Ser. No. 381,377
Claims priority, application Switzerland, Jun. 11, 1981, 3819/81
Int. Cl.³ B21F 7/00
U.S. Cl. 140—119 1 Claim



1. A tool to supply, twist and cut a portion of a metal wire (14) to form a fastener, said tool comprising a shaft (2), a head (1) integral with one end of said shaft (2) and including a tubular extension (6) having oppositely disposed longitudinal slots (7,8) therein, said head and shaft having an axial bore therein for receiving a length of wire, cutting pliers (5) mounted in said extension above said head and including a pair of pivotally connected handles (9,10), a cutting jaw at the end of each of said handles, a tubular sleeve (4) in which said shaft (2) is mounted, said plier jaws projecting from the free end of said tubular extension (6), said plier handles (9,10) projecting through said longitudinal slots (7,8), drive means for rotatably driving said shaft, said head, said extension and said pliers, said drive means including a helicoidal groove on said shaft, clutch means comprising a first toothed member secured in the upper end of said sleeve, a second toothed member slidably mounted on said shaft, a lug on said second toothed member engaged in said helicoidal groove on said shaft, a return spring surrounding said shaft and abutting the bottom of said second toothed member at one end and at the other end abutting a stop member at the end of said shaft opposite said head, said spring normally supporting said second toothed member in a position spaced from said first toothed member whereby upon sliding said sleeve longitudinally relative to said shaft against the action of said spring and away from said head, said first and second toothed members are engaged to rotate said shaft, said head, said extension and said pliers to twist portions of said wire around one another and cut them.

4,448,226

METHOD OF FILLING DISPOSABLE GAS LIGHTER AND DEVICE FOR FILLING SAME

Bernard Dumont, Isère, France, assignor to Feudor S.A., Rhone, France

Filed Sep. 2, 1981, Ser. No. 298,739
Claims priority, application France, Sep. 5, 1980, 80 19587
Int. Cl.³ B65B 3/04
U.S. Cl. 141—2 2 Claims

1. A method of filling a lighter having a well forming part of a lighter body defining a fuel reservoir and adapted to receive a valve assembly, said method comprising the steps of:

positioning in said well an obturator having axially spaced first, second and third portions, said first portion being formed with a passage, said second portion being free from a passage and said third portion being of a cross section substantially less than that of a wall portion of said well, said obturator initially occupying a starting position in which said second portion cooperates with said wall portion to block flow of fuel through said well;

shifting said obturator in one direction into a first position wherein said first portion is received in said wall portion and feeding liquid fuel through said well into said reservoir via said passage in a direction opposite said first direction;

axially shifting said obturator in the opposite direction into a second position to dispose said second portion in said wall portion and block flow from said reservoir through said well;

axially shifting said obturator in said opposite direction into a third position whereby a clearance is provided between said wall portion and said third portion to allow flow of fuel from said reservoir through said well for lighter operation; and

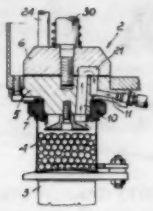
mounting a valve assembly in said well for controlled outflow of fuel therefrom.

4,448,227

DRESSING OR PRESERVING LIQUID FILLING UNIT FOR VACUUM FILLING MACHINES

Giuseppe Zanichelli, Via Mantova, 65, Parma, Italy

Filed Oct. 13, 1981, Ser. No. 310,590
Claims priority, application Italy, Oct. 24, 1980, 25573 A/80
Int. Cl.³ B65B 31/00
U.S. Cl. 141—57 7 Claims



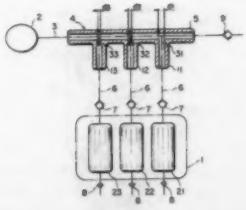
1. A dressing or preserving liquid filling unit for vaccum filling and the like machines, comprising a carousel, at least one valving element for the introduction of dressing liquid in cans and the like containers, said at least one valving element being carried on said carousel and including a lower body, associable in sealed relationship with one said container, and an upper body overlying and pivotable relatively to said lwoer body to sequentially carry out the steps of creating a vaccum in said container, filling said container with said dressing liquid, topping, where required, said container with said dressing liquid, and removing the vacuum from the thusly filled container, programmed actuating means being provided for said upper body, wherein, according to the improvement, said programmed actuating means comprise a cam following element carried by said upper body and a fixed camming path arranged above a processing path followed by said containers and engaged by said cam following element to bring said upper body cyclically into positions corresponding to said steps.

4,448,228

AIR BAG SYSTEM HAVING A BRANCHED JOINT

Nobuyuki Hashimoto, Toyota, and Takemi Hattori, Kariya, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Dec. 29, 1981, Ser. No. 335,524
Claims priority, application Japan, Jan. 10, 1981, 56-1310[U]
Int. Cl.³ B65B 3/04
U.S. Cl. 141—114 1 Claim



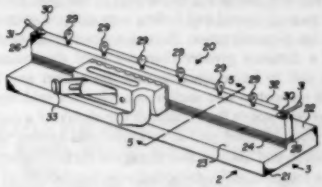
1. An air bag system for a back rest comprising a plurality of inflatable air bags; an air source for supplying air to said air bags, a branched joint for distributing the air from said air source to said air bags; check valves, each being provided between said joint and said air bags for allowing the air to flow to the air bags; and openings of ports of said joint to branch pipes being different in cross-sectional area to regulate the order of inflation of the air bags; the area of the opening of the port for the at least one of the air bags against which the waist of an occupant rests being arranged such that said one of the air bags is fully inflated first.

4,448,229

PLANING JIG

William D. Woods, and John H. Pigman, both of Phoenix, Ariz., assignors to International Design Corporation, Phoenix, Ariz.

Filed Mar. 5, 1982, Ser. No. 355,210
Int. Cl.³ B27C 1/14
U.S. Cl. 144—129 16 Claims



1. A planing jig for facilitating hand planing an edge of a flat work piece using a bench plane having a planar sole surface, a blade having a straight cutting edge parallel to and extending from the sole surface and a planar side surface which is perpendicular to the sole surface and perpendicular to the cutting edge, said blade being spaced inwardly from said side surface, said planing jig including in combination:

(a) a platen, comprising:

(i) a horizontal planar upper surface, and

(ii) a horizontal planar lower surface, parallel to said upper surface, and

(iii) a vertical planar guide surface, perpendicular to and located between said upper and lower surfaces, wherein the maximum vertical dimension from said lower surface to any point on said guide surface is less than the minimum distance between the blade and the side surface of such bench plane, and

(iv) an edge groove located immediately between said guide surface and said upper surface, and shaped in such a manner that, when such bench plane is positioned with the side surface thereof in contact with said lower surface, and the sole surface of such plane is in contact with said guide surface, the blade of such plane cannot come into contact with any material comprising said platen, and

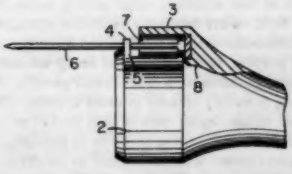
(b) means for clamping a work piece securely onto said upper surface of said platen with the edge to be planed extending beyond said upper surface and above said edge groove.

4,448,230

NAIL HOLDING HAMMER

Claude E. Reed, 7400 N. Adams Rd., North Adams, Mich. 49262

Filed Mar. 18, 1982, Ser. No. 359,569
Int. Cl.³ B25C 1/00
U.S. Cl. 145—30 A 1 Claim



1. In a nailing hammer having a handle, a head affixed to the

handle, a poll defined on the head having a circumference and defining a flat nail driving surface, the improvement comprising an elongated socket defined in the head at the poll adjacent the poll circumference and having an axis substantially perpendicular to the poll nail driving surface, said socket having an open end disposed toward the poll circumference and a closed end axially spaced from said open end a distance significantly greater than the axial dimension of the head of a nail to be retained within the socket, a permanent magnet within said socket defining said closed end thereof having a nail head engaging surface substantially parallel to the poll nail driving surface, a pair of spaced nail holing lugs defined upon the poll adjacent the circumference thereof spaced from said socket open end a distance greater than the axial dimension of the head of a nail to be retained within the socket and laterally offset with respect to said socket axis whereby said lugs define a nail receiving notch for receiving the shank of a nail whose head is received within said socket and held against said magnet, said notch and magnet nail engaging surface mounting the length of a retained nail substantially perpendicular to the poll nail driving surface permitting the nail to be started in the direction it is to be driven.

4,448,231

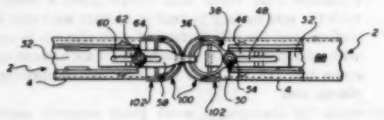
PANEL SYSTEM EDGE SEALING MEANS

Stephen A. Salkeld, Mechanicsburg; Mark E. Stock, McSherrystown, both of Pa., and Robert J. Welch, West Chicago, Ill., assignors to Litton Business Systems, Inc., York, Pa.

Continuation of Ser. No. 047,650, Jun. 11, 1979, abandoned. This application Aug. 5, 1982, Ser. No. 405,625

Int. Cl.³ A47G *5/00*

U.S. Cl. 160—135 **1 Claim**



1. In a room divider panel system comprised of two or more panels, each of said panels having a vertical edge, spring-biased means connected between said panel, said spring-biased means permitting two or more of said panels to be drawn against each other along said panels' vertical edges in any of a plurality of angular positions relative to each other, an improved means for sealing the vertical edges of adjoining panels so that said vertical edges are sealed along their length when two or more of said panels are joined in any of a plurality of angular positons, an identical one of said edge sealing means being mounted along each vertical adjoining edge of each of said adjoining panels, each of said adjoining edge sealing means being comprised of a first, outer, relatively yieldable substantially semi-circular elastometric sealing portion and a second, inner, relatively rigid portion, said first portion being substantially concentric in configuration with said second portion, said second portion being convexly arcuate in cross section, whereby said spring-biased means draws each of said first elastometric substantially semi-circular sealing portions of adjoining edge sealing means into contact with each other to produce an intimate sealing relationship along the vertical edges of adjoining panels when said panels are in a plurality of angular positions relative to each other.

4,448,232

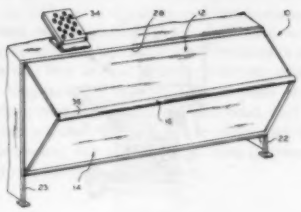
BI-FOLD DOOR ASSEMBLY

Coy E. McQueen, and Lynn O. Twedt, both of Harvard, Ill., assignors to Erect-A-Tube, Inc., Harvard, Ill.

Filed May 3, 1982, Ser. No. 374,178

Int. Cl.³ E05D *15/26*

U.S. Cl. 160—207 **12 Claims**



1. A bi-fold door assembly for a building, comprising:

an upper door section and a lower door section hinged to one another, said door sections having front surfaces facing outwardly of said building and rear surfaces facing inwardly thereof;

a door track mounted adjacent said inwardly facing rear surfaces of said upper and lower door sections in an upwardly and inwardly inclined position relative to said building;

means associated with the bottom of said lower door section cooperating with said door track;

said upper and lower door sections being disposed in a common plane when fully lowered;

said common plane being inclined upwardly and inwardly relative to said building to lie in a plane defined by said door track; and

a bearing surface on said door track adapted to support said upper and lower door sections when fully lowered.

4,448,233

PULLING DEVICE

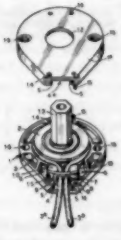
Rombout M. Rombouts, BT Capelle A/D Yssel, Netherlands, assignor to Allpac Holding B.V., Raamsdonkveer, Netherlands

Filed Nov. 9, 1982, Ser. No. 440,270

Claims priority, application Netherlands, Feb. 5, 1982, 8200459

Int. Cl.³ E06B *9/208*

U.S. Cl. 160—319 **3 Claims**



1. A pulling device for a material wound around a roll shaft comprising in combination:

(a) a cord pulley having a projecting hub,

(b) a housing for rotatably supporting said cord pulley and being provided with a lateral opening for passing the projecting hub of said pulley adaped to be connected to a

roll shaft and provided with a cord opening for passing the free ends of a cord wound about said cord pulley,

(c) clamp means having an opening for passing said cord ends situated within said housing at one side of the cord pulley periphery between said pulley and the boundary of said cord opening in said housing,

(d) said housing defining a chamber between the boundary of said cord opening and said cord pulley permitting of a tilting motion of said clamp,

(e) end portions on said clamp projecting toward said pulley at both sides of its opening for said cord adapted to abut against the housing at said boundary of said cord opening in the housing permitting a rotation of said cord pulley when pulling one of said cord ends from outside of the housing and permitting a tilting of said clamp when a rotational force is exerted on said hub of said cord pulley.

4,448,234

METHOD FOR FORMING SAND CORES AND MOLDS

Brian D. Kelley, and Patrick H. Stewart, both of Danville, Ill., assignors to CL Industries, Inc., Danville, Ill.

Filed Aug. 5, 1982, Ser. No. 405,415
Int. Cl.³ B28B 7/34
U.S. Cl. 164—16 **7 Claims**

1. In a method of forming sand cores or molds which comprises

mixing a major amount of sand with a minor amount of an organic peroxide, hydroperoxide or hydroxy-hydroperoxide, and an acid-curable, condensation-type resin or a condensation-type resin precursor or a condensation-type resin prepolymer,

forming said mixture into the shape of a core or mold, and

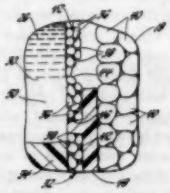
gassing said formed mixture with sulfur dioxide for a period of a few seconds to several minutes at a temperature from room temperature or ambient to about 300° F. to cause resin polymerization; the improvement comprising adding to said mixture, prior to the forming step, a hydrogen peroxide composition comprising a major amount of concentrated hydrogen peroxide and minor amounts of phosphoric acid, a halogen-containing acid, and a water-soluble perborate salt.

4,448,235

VARIABLE-PERMEABILITY, TWO-LAYER PATTERN COATING FOR LOST FOAM CASTING

Gary E. Bishop, Romeo, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jul. 26, 1982, Ser. No. 402,108
Int. Cl.³ B22C 9/02, 7/00
U.S. Cl. 164—34 **6 Claims**



1. A coated pattern for casting reduced porosity metal by a lost foam process comprising

a fugitive pattern adapted to be substantially concurrently decomposed and duplicated by molten metal to form a casting, said decomposition forming vapors that produce pores in the casting when entrapped in the metal, and

a coating applied to the pattern and comprising

a thermally insulative material that is substantially stable at metal casting temperatures, and

a material adapted to be substantially vaporized by heat from pattern-duplicating molten metal during casting and being arranged within the coating such that said insulative material thermally insulates said vaporizable material from the pattern and thereby is adapted to insulate the vaporizable material from pattern-duplicating molten metal during casting,

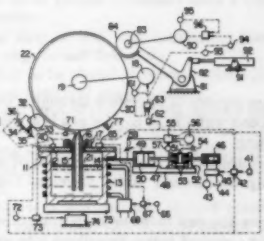
said materials cooperating to initially retard gas flow through the coating but to readily vent pattern-derived vapors through the residual material after vaporization of said vaporizable material, said insulation within said coating being adapted to suitably delay vaporization to allow pattern-derived vapors to reduce turbulence in the molten metal, but thereafter allowing pattern-derived vapors to vent through the coating to avoid entrapment within the metal.

4,448,236

APPARATUS FOR PRODUCING THIN METAL SHEET

Tomoaki Kimura, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 151,492, May 27, 1980, abandoned. This application Mar. 16, 1982, Ser. No. 358,614
Claims priority, application Japan, May 25, 1979, 54-63860; May 25, 1979, 54-63868; Jul. 2, 1979, 54-82661
Int. Cl.³ B22D 11/06
U.S. Cl. 164—423 **17 Claims**



1. An apparatus for producing thin metal sheet, comprising:

a nozzle;

a rotary drum;

means for rotating said drum and applying molten metal to the peripheral surface of said rotary drum through said nozzle at a predetermined application pressure, and allowing said molten metal to be cooled and solidified on said peripheral surface of said rotary drum to produce a thin metal sheet as said drum rotates;

crucible means for containing the molten metal;

an inlet end of said metal nozzle extending into said crucible means to be immersed in the molten metal;

said crucible means having a gas plenum formed in its upper portion above the molten metal;

a gas-pressure chamber device of a variable volume and fluid communicating with said gas plenum;

thickness sensor means to produce a signal correlated to the thickness of said thin metal sheet;

means responsive to said signal to produce a control instruction;

controlling means adapted to cause a change of volume of said gas-pressure chamber device to adjust the pressure in said gas plenum, in accordance with the control instruction formed in response to the output of said thickness sensor means sensitive to the thickness of said thin metal sheet, thereby to control the rate of application of said molten metal in accordance with the change of thickness of said thin metal sheet; and

said controlling means including a mechanical actuator drivingly connected to said expansible chamber device and having means for increasing the spring constant of said actuator.

4,448,237

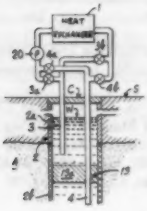
SYSTEM FOR EFFICIENTLY EXCHANGING HEAT WITH GROUND WATER IN AN AQUIFER

William Riley, RD #1, P.O. Box 223, Pittstown, N.J. 08867

Continuation-in-part of Ser. No. 207,405, Nov. 17, 1980, abandoned. This application Jul. 30, 1982, Ser. No. 404,354

Int. Cl.³ F24H 7/04

U.S. Cl. 165—2 21 Claims



8. A system capable of operation through a single well bore for using ground water in an aquifer as a heat source and a heat sink comprising:

inlet means disposed in the upper portion of said aquifer for admitting the ground water thereinto from said upper portion;

outlet means disposed in the upper portion of said aquifer for exhausting ground water therefrom into said upper portion;

inlet means disposed in the lower portion of said aquifer for admitting the ground water thereinto from said lower portion; and

outlet means disposed in the lower portion of said aquifer for exhausting ground water therefrom

into said lower portion;

heat exchanger means for exchanging heat with the ground water conducted through said water-conducting means; and

means for producing ground water flow from and to said aquifer through said water-conducting means to selectively create a temperature difference in the normally uniform temperature ground water in said aquifer inhibiting convective mixing by causing warmer water to accumulate in the upper portion and cooler water to accumulate in the lower portion, said flow-producing means comprising:

means for drawing ground water from which heat is to be extracted in said heat exchanger means, through said upper aquifer inlet means into said water-conducting means;

means for returning ground water which has absorbed heat in said heat exchanger means through said upper aquifer outlet means into said upper aquifer portion;

means for drawing ground water which is to absorb heat in said heat exchanger means, through said lower aquifer inlet means into said water-conducting means; and

means for returning ground water from which heat has been absorbed in said heat exchanger means, through said lower aquifer outlet means into said lower aquifer portion.

4,448,238

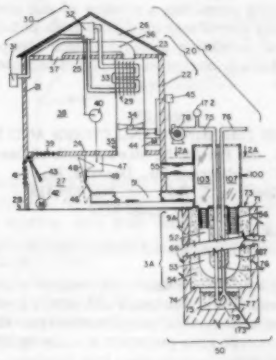
HEAT EXCHANGE SYSTEM AND PROCESS FOR HEATING AND COOLING USING GEOTHERMAL ENERGY

Lewis Singleton, Jr., Palo Duro Club, Rte. 2, Canyon, Tex. 79015, and James M. Whitney, 3403 Paramount, Amarillo, Tex. 79109

Filed Sep. 11, 1980, Ser. No. 186,114

Int. Cl.³ F24D 11/00

U.S. Cl. 165—45 3 Claims



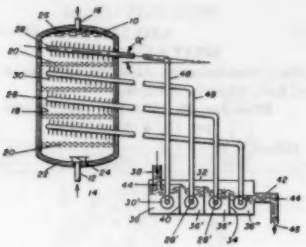
1. A heating and cooling system for a house comprising, in operative combination, a heat exchange unit for altering the temperature of air, ducts leading from said unit to rooms in said house and air confinement means extending from said rooms to said heat exchange unit, and a geothermal heat exchange system having an outlet duct operatively connected to said heat exchange unit, a mass of ground extending downward 30 to 80 feet from the upper surface of said ground, a downwardly extending hole extending from said surface of said ground, a pair of downwardly extending ducts in the hole, a space between said ducts and the interior of said hole, and a porous mass in said space between said ducts and the interior of said hole, said space containing water vapor but substantially completely free of liquid water, each of said pair of ducts in heat conducting relationship with said porous mass and downwardly extending into said ground to a depth of 30 to 80 feet, each of said ducts joined to each other at a bottom end thereof, said ducts each having walls with a continuous series of corrugations surrounding an internal cavity, each of said corrugations having a centrally extending internal ridge and a radially extending internal furrow, each of said ridges and furrows extending transversely to the length of the duct, the surface area of the duct wall being at least 2π D L for each unit of length of the duct wall measured parallel to the length of the duct in units of length greater than L wherein D is minimum diameter of the duct between said internal ridges and L is the length in feet between said ridges of said corrugations, the cross-section area of the internal furrows of the duct measured transversely between said internal ridges being between 25 and 33% of the cross-sectional area of the cavity of said duct measured transversely to the length of the duct and between the internal ridges, and an inlet duct of said pair of ducts operatively connects to an air discharge opening from said rooms, and wherein a portion of the hole extends downwardly below said ducts, a liquid conduit means extends below said ducts in the hole, and a liquid impelling means located below said ducts is operatively connected to said liquid conduit means whereby to move liquid from the portion of the hole below said ducts upwardly and out of said hole and maintain the exterior surface of said ducts free of contact with liquid water.

4,448,239

HEAT-PIPE-DIODE-CHARGED THERMAL

Donald K. Edwards, Irvine, Calif., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 16, 1982, Ser. No. 369,314
Int. Cl.³ F28D 15/00
U.S. Cl. 165—47 6 Claims



1. A heat-pipe-diode charged thermal reservoir which comprises:

tank means for holding a reserve of heated feed water, which includes;

a feed water vessel having thermally insulated walls;

an outlet connection for hot feed water operatively disposed on an upper end of said vessel;

an inlet connection for incoming cold feed water operatively disposed on a lower end of said vessel; and

a baffle member fixedly positioned on the bottom of said vessel opposite said inlet connection, said baffle member helping to stratify feed water in said vessel;

means for stratifying said feed water in said tank means, which includes;

a plurality of horizontally spaced apart screens supported from the interior walls of said vessel;

means for holding a waste stream remote from said tank means, which includes;

a compartmented evaporator tank, operatively disposed at a lower level than said tank means, having a waste fluid inlet connected to a top side of a first compartment and a waste tank output connection positioned at a lower level on the side of another compartment;

baffle means for dividing said waste stream flow and for permitting overflow of waste stream from said first compartment to other compartments, which includes;

a plurality of baffle walls for dividing said tank into multiple decreasingly sized compartments for permitting waste fluid to exit by gravity in the direction of the waste fluid flow;

means for automatically extracting heat from said waste stream and for using said heat to preheat incoming and stored feed water; which includes

a plurality of inclined heat-pipe-diode condenser members operatively disposed between each layer of said means for stratifying;

a plurality of heat receiving members fluidically connected to said condenser member, and horizontally disposed in separate sections of said compartments evaporator tank;

a plurality of vertical pipes fluidically connecting each of said condenser members to a receiving member, said condenser member located in the hottest and upper stratum of said feed water vessel is fluidically coupled to a receiving member located in the hottest compartment of said evaporator tank, each progressively cooler condenser member being fluidically connected to a progressively cooler receiving member in said evaporator tank; and

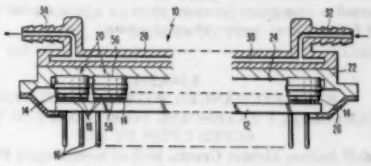
a heat transfer fluid sealed in each of said condensor and receiving members.

4,448,240

TELESCOPING THERMAL CONDUCTION ELEMENT FOR COOLING SEMICONDUCTOR DEVICES

Andre Sharon, Arlington, Mass., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 20, 1982, Ser. No. 450,884
Int. Cl.³ F28F 7/00
U.S. Cl. 165—80 C 7 Claims



1. An extensible bridge element for use in a semiconductor package to conduct heat from a semiconductor device to a cold plate located in close proximity to the device comprising

a first plate to be placed in contact with a semiconductor device surface

a first spiral strip of thin heat conductive material joined along an edge to said first plate,

a second plate to be placed in contact with a heat sink surface spaced from said device surface,

a second spiral strip of thin heat conductive material interleaved with said first spiral strip in a laterally displaced overlapping and slideably contacting telescoping relation, said second spiral strip joined along an edge to said second plate, and

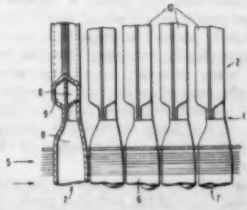
means to bias said first and said second plates outwardly relative to each other, said element capable in use of adjusting to spacing variations between the device surface and heat sink surface.

4,448,241

HEAT-EXCHANGER WITH A BUNDLE OF PARALLELLY EXTENDING PIPES ADAPTED TO BE ACTED UPON BY AIR

Rudolf Andres; Helmut Grantz, both of Sindelfingen; Wolf-Dietrich Münzel, Ehningen, and Wolfgang Odebrecht, Sindelfingen, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 29, 1982, Ser. No. 437,571
Claims priority, application Fed. Rep. of Germany, Oct. 31, 1981, 3143332
Int. Cl.³ F28D 15/00
U.S. Cl. 165—104.14 33 Claims



1. A heat-exchanger with a bundle of metallic pipe means extending substantially parallelly to one another and adapted to be acted upon by air, said pipe means being hermetically

closed and constructed in the manner of heat-pipe means, and at least one metallic heat-exchanger head means extending transversely to the pipe bundle and adapted to be traversed by a heat carrier medium, said heat-exchanger head means being sealed off from a flow point of view with respect to the heat-pipe hollow spaces of the pipe bundle but being in heat-transferring connection therewith, characterized in that the heat-exchanger head means is formed of at least one expanded three-layered flat partial composite laminated body means per pipe row which includes two separate channel means, said body means being aligned substantially parallelly to the associated pipe row, one of the channel means of a body means being operatively connected with the heat-pipe hollow spaces of the pipe row to form a heat-pipe channel means while the other channel is adapted to be acted upon by a heat carrier medium and forms a heat carrier channel means.

4,448,242

HEAT-EXCHANGER WITH A BUNDLE OF PARALLELLY EXTENDING PIPES ADAPTED TO BE ACTED UPON BY AIR

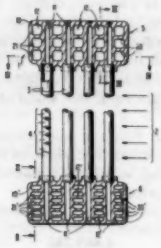
Rudolf Andres; Helmut Grantz, both of Sindelfingen; Wolf-Dietrich Münzel, Ehningen, and Wolfgand Odebrecht, Sindelfingen, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Oct. 28, 1982, Ser. No. 437,202

Claims priority, application Fed. Rep. of Germany, Oct. 31, 1981, 3143333

Int. Cl.³ F28D *15/00*

U.S. Cl. 165—104.14 **20 Claims**



1. A heat-exchanger comprising a bundle of substantially parallelly extending metal pipe means adapted to be acted upon by air, which are arranged in at least one row, said pipe means being hermetically sealed and constructed in the manner of heat-pipe means forming heat-pipe hollow spaces, at least one metallic connection box means extending transversely to the pipe bundle and surrounding section-wise the heat-pipe hollow spaces of the pipe bundle, said connection box means being adapted to be traversed by a heat carrier medium and being sealed off with respect to the heat pipe hollow spaces of the pipe bundle but being in heat-transferring connection with said heat pipe hollow spaces, characterized in that

(a) the connection box means is formed essentially of an extruded profile means whose profile direction is disposed substantially parallel to the at least one pipe row;

(b) a longitudinally extending slot-like heat pipe channel means being provided in the extruded profile means within the area of each pipe row, said slot-like heat pipe channel means being closed over the entire circumference and at the end faces thereof and being open exclusively toward the individual pipe means of the corresponding pipe row;

(c) longitudinally extending heat carrier channel means open at the end faces of the extruded profile means being provided inside of the extruded profile means on both sides of each heat pipe channel means; and

(d) guide cover means sealingly secured at both end faces of the extruded profile means which operatively connect adjacent heat carrier channel means into a channel system adapted to be traversed uniformly by a respective medium.

4,448,243

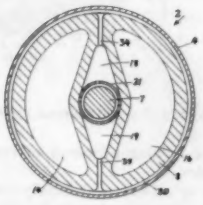
HEAT EXCHANGER

John R. Pain, Montmorency, Australia, assignor to Heat Transfer Pty. Ltd., Victoria, Australia

Filed Jun. 29, 1981, Ser. No. 278,080

Int. Cl.³ F28F *19/00*

U.S. Cl. 165—134 R **8 Claims**



1. A heat exchanger for primary and secondary fluids between which heat exchange occurs, said exchanger comprising

at least first, second and third coaxially disposed tubes of successively larger diameters, said tubes being spaced apart by a pair of end manifolds to form annular fluid flow passages for said primary and secondary fluids between adjacent tubes,

at least one of said manifolds having a generally conical portion and having first, second and third pairs of sealing elements which sealingly engage the inner surfaces of the first, second and third tubes respectively, circumferential flow passages located between the sealing elements of at least said second pair,

said conical portion including first and second chambers formed therein for the primary and secondary fluids and wherein, in transverse section of said conical portion, said first and second chambers lie on opposite sides of a diametrical line,

a third chamber located in said conical portion between said first and second chambers,

a tubular member extending through third chamber so as to divide said third chamber into three chambers: one central chamber within said tubular member, and circulating fluid inlet and outlet chambers on opposite sides of said central chamber, said diametrical line passing through said circulating fluid inlet and outlet chambers and said central chamber,

said conical portion further including generally radial ducts extending from respective circulating fluid inlet and outlet chambers to said circumferential flow passage on generally opposite sides thereof,

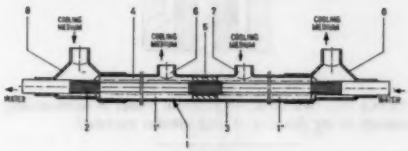
said manifold further including circulating fluid inlet and outlet ducts for fluid communication to the circulating fluid inlet and outlet chambers respectively whereby in use circulating fluid can pass through the circulating fluid inlet duct, to the circulating fluid inlet chamber, through one of the radial ducts to the circumferential passage and can flow through the passage and enter the other radial duct, then flow through the circulating fluid outlet chamber and thence out of the circulating fluid outlet duct.

4,448,244

HEAT-TRANSMITTING DEVICE FOR HEAT PUMPS

Hans Demuth, Voehringen; Peter Kropp, Nersingen, and Karl Noll, Illerrieden, all of Fed. Rep. of Germany, assignors to Wieland-Werke AG, Ulm, Fed. Rep. of Germany

Division of Ser. No. 300,858, Sep. 10, 1981, Pat. No. 4,406,137.
This application May 31, 1983, Ser. No. 499,615
Claims priority, application Fed. Rep. of Germany, Sep. 17, 1980, 3034965
Int. Cl.³ F25B 15/00
U.S. Cl. 165—141 16 Claims



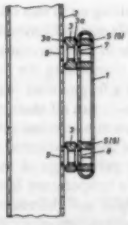
1. A heat transmitting apparatus, comprising an elongate tubular shell, an elongate core tube adapted to have a medium flow therethrough and extending through said shell lengthwise thereof, a closed space being defined between the interior surface of said shell and the exterior surface of said core tube, a fill member which is disposed in and divides said space into separate first and second portions which are located on opposite sides of said fill member, and means defining first, second, third and fourth openings through said shell, said first and third openings communicating with said first portion of said space and said second and fourth openings communicating with said second portion of said space, said first and second openings being adjacent said fill member and said third and fourth openings being spaced from said fill member.

4,448,245

RADIATOR

Jacques de Palézieux, Hauterive, Switzerland, assignor to Runtal Holding Company S.A., Glarus, Switzerland

Filed Feb. 19, 1982, Ser. No. 350,354
Claims priority, application Switzerland, Mar. 12, 1981, 1678/81
Int. Cl.³ F28F 9/02
U.S. Cl. 165—174 6 Claims



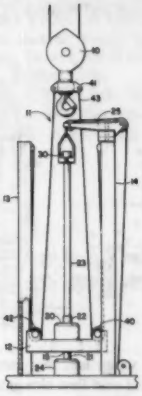
1. A radiator comprising mutually parallel flat tubes connected to header pipes for the feed and return flow of the heating medium, said flat tubes having connection bores formed at a distance from each end of each said flat tube and on opposite sides at a distance from the longitudinal axis of the tube, and said flat tubes having inside support parts resting against the mutually opposite inner tube walls in the region of the connection bores, the improvement wherein each said support part is angled into a U-shape of approximately the same width as the internal width of the tube, said support part having two bent ends each of which being formed for coaxially surrounding a portion of the circumference of one of the connection bores, said support part also forming the end closure wall of the flat tube and being welded thereto along the end edge of the tube, the header pipes having connection bores in alignment with the flat tube connection bores, connecting rings provided for connecting the flat tubes and header pipes together, the connecting rings having tapered end faces for applying pressure welding and being disposed in alignment with the aligned connection bores coaxially with each bent end of the U-shaped support part for connecting by pressure welding the flat tubes to the header pipes.

4,448,246

APPARATUS FOR SETTING CASING IN AN OIL WELL

William Guier, 3100 E. 71st St., Tulsa, Okla. 74105

Filed Jul. 12, 1982, Ser. No. 397,516
Int. Cl.³ E21B 15/00, 19/02
U.S. Cl. 166—77 2 Claims



1. In combination with a drilling rig of sufficient capacity for drilling the bore of an oil well with a drawworks and mast supporting a crown block through which the cable from the drawworks runs through the crown block in suspension of the traveling block over the well bore,

a string of casing in the well bore,

a mechanical linkage connecting the traveling block and the casing, including

a pair of posts vertically extended upward from the ground on each side of the well bore and a pair of pulleys connected to the casing string with a cable running from the upper portion of each post down through the pair of pulleys and up to the traveling block, whereby

the weight-bearing capacity of the mechanical linkage is great enough to enable the drawworks and cable of the drilling rig to suspend the casing string in the well bore by the mechanical advantage of the linkage.

4,448,247

GEOTHERMAL WELL HEAD CLEAN OUT AND SHUT OFF ASSEMBLY

Lehman T. Reed, Bakersfield, Calif., assignor to Midway Fishing Tool Company, Long Beach, Calif.

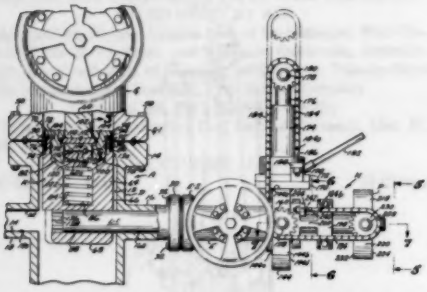
Filed Sep. 3, 1982, Ser. No. 414,903
Int. Cl.³ E21B 33/068
U.S. Cl. 166—82 14 Claims

1. In combination with a geothermal well that includes casing that extends downwardly from a first flange to a geological zone from which pressurized fluid containing minerals flows; a substantially vertical first tubular member that includes a lower second flange secured to said first flange and an upper third flange, first and second horizontal axially aligned, lateral tubular member that extend outwardly from said first

tubular member in opposite directions to terminate in fourth and fifth flanges; first, second and third flanged gate valves secured to said fourth, fifth and third flanges, each of said gate valves having a longitudinal passage therein; a first assembly for cleaning deposited solid minerals from the interior surfaces of said tubular lateral members without killing said well, said first assembly including:

a plurality of elongate rigid members including a first elongate rigid member that include threaded ends that permit said first elongate member to have other of said elongate rigid members removably connected thereto end to end with each of said rigid elongate members having a diameter slightly less than that of said first and second tubular laterals;

b. first means removably mounted on said first gate valve that permit said first elongate rigid member to be inserted in said passage therein and removably grip said first elon-



gate rigid member when said first gate valve is placed in an open position and said first elongate rigid member has a leading end thereof subject to said pressurized fluid; and

c. second means operatively associated with said first means for intermittently moving said first elongate member forwardly through said first gate valve when said first gate valve is in an open position, with each intermittent move occurring after one of said rigid elongate members is connected to said first elongate rigid member and others of said elongate rigid members are sequentially added thereto, and each intermittent move being preceded by said first means releasing said grip on one of said elongate rigid members and re-establishing said grip on the one of said rigid elongate members that has been added thereto after said intermittent move has been completed, and said first elongate rigid member as it advances through said first tubular lateral scraping said deposited foreign material from the interior surface thereof.

4,448,248

ENHANCED FLOW TOOL POSITIONER

Edward C. Schwind, Burleson, Tex., assignor to Gearhart Industries, Inc., Fort Worth, Tex.

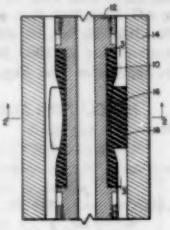
Filed Jun. 26, 1981, Ser. No. 277,910
Int. Cl.³ E21B *17/10*
U.S. Cl. 166—241 **4 Claims**

1. Apparatus for centering a tubular member comprising:

a generally cylindrical resilient body adapted to be mounted around said tubular member; and

at least three resilient vanes mounted longitudinally about said resilient body, each of said at least three resilient vanes having a varying cross-sectional width,

said generally resilient body varying in diameter in inverse proportion to the cross-sectional width of each of said at least three resilient vanes wherein the cross-sectional area



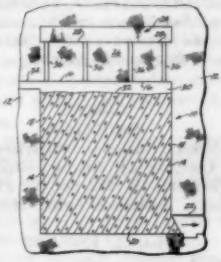
between any two adjacent resilient vanes is substantially constant along the axis of said tubular member.

4,448,249

METHOD OF IN SITU OIL SHALE RETORT IGNITION WITH OXYGEN CONTROL

Frederick M. Gragg, Seabrook, Tex.; Jian C. Shen, Santa Ana, Calif., and Carl L. Jacobson, Rifle, Colo., assignors to Occidental Research Corporation, Irvine, Calif.

Filed Jun. 18, 1982, Ser. No. 389,847
Int. Cl.³ E21B *43/247, 47/06*
U.S. Cl. 166—251 **31 Claims**



1. A method for igniting an in situ oil shale retort containing a fragmented permeable mass of formation particles containing oil shale in a retort site in a subterranean formation containing oil shale, the method comprising the steps of:

(a) introducing into a fragmented permeable mass of formation particles in an in situ oil shale retort, a hot ignition gas comprising oxygen at a selected concentration for heating the top surface of the fragmented mass;

(b) determining the percentage of the fragmented mass top surface that is at a temperature less than the ignition temperature of oil shale; and thereafter

(c) increasing the concentration of oxygen in the ignition gas by an amount inversely proportional to the percentage determined in step (b).

4,448,250

METHOD OF FREEING A HOLLOW TUBULAR MEMBER

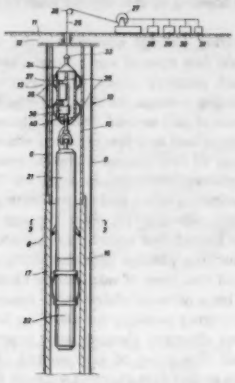
Claude E. Cooke, Jr., and Leon H. Robinson, both of Houston, Tex., assignors to Exxon Production Research Co., Houston, Tex.

Filed Apr. 22, 1983, Ser. No. 487,550
Int. Cl.³ E21B *31/00, 47/06*
U.S. Cl. 166—255 **10 Claims**

1. A method for freeing and releasing a hollow tubular member which has become stuck by differential pressure

against the wall of a wellbore, said method comprising the steps of:

measuring temperature distribution around the circumference of said member at a predetermined vertical depth where said member is stuck to determine which side of said member is stuck against the side of the wellbore; and



perforating the side of said member determined to be stuck to place the interior of said member in fluid communication with the adjacent formation and to free said member from the side of the wellbore by relieving the differential pressure between the member and the formation.

4,448,251

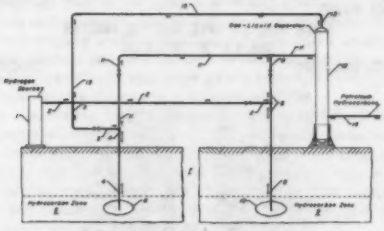
IN SITU CONVERSION OF HYDROCARBONACEOUS OIL

Laurence O. Stine, Western Springs, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 223,467, Jan. 8, 1981, abandoned. This application Dec. 9, 1982, Ser. No. 448,117

Int. Cl.³ E21B *43/24, 43/40*

U.S. Cl. 166—263 **7 Claims**



1. A method for the in situ conversion and recovery of heavy hydrocarbonaceous crude oil containing indigenous trace metal from two adjacent non-communicating reservoirs containing said crude oil and which are alternately pressured and recovered, which method comprises:

(a) establishing within a first of said crude oil reservoirs an in situ reaction zone and heating the crude oil therein to a hydrocarbon conversion temperature;

(b) thereafter introducing to said reaction zone sufficient elemental, essentially-anhydrous hydrogen to generate therein a pressure from about 200 to about 10,000 psig and contacting the oil in said zone with the hydrogen for a sufficient time to effect hydroconversion therein;

(c) establishing within the second of said crude oil reservoirs a second in situ reaction zone and heating the crude oil therein to a hydrocarbon conversion temperature;

(d) depressuring said first reaction zone to yield an effluent comprising hydroprocessed crude oil and unreacted elemental hydrogen;

(e) separating the effluent from said first reaction zone to recover a hydroprocessed crude oil and a gaseous component comprising elemental hydrogen;

(f) introducing to said second reaction zone sufficient elemental, essentially-anhydrous hydrogen, a portion of which is recovered in step (e), to generate therein a pressure from about 200 to about 10,000 psig and effecting hydroconversion of crude oil in the second reaction zone; and,

(g) depressuring said second reaction zone to yield an effluent comprising hydroprocessed crude oil and unreacted elemental hydrogen.

4,448,252

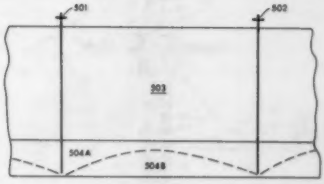
MINIMIZING SUBSIDENCE EFFECTS DURING PRODUCTION OF COAL IN SITU

Xerxes T. Stoddard, Denver; Vesper A. Vaseen, Wheat Ridge, and Ruel C. Terry, Denver, all of Colo., assignors to In Situ Technology, Inc., Golden, Colo.

Division of Ser. No. 273,378, Jun. 15, 1981. This application Apr. 18, 1983, Ser. No. 486,088

Int. Cl.³ E21B *43/00, 43/243*

U.S. Cl. 166—263 **1 Claim**



1. A method of removing flowable water from a wet underground coal seam, comprising the steps of

drilling a first well from the surface of the earth into an underground coal seam,

drilling a second well from the surface of the earth into the underground coal seam, the second well being spaced apart from the first well,

drawing down the localized water table by pumping water from the first well and the second well,

terminating pumping water from the first well and the second well,

injecting an inert gas into the first well under sufficient pressure to displace water with the resultant flow of water out of the second well,

continuing injection of the inert gas into the first well until water ceases to flow out of the second well,

terminating injection of the inert gas into the first well, then pumping water out of the second well until water drawdown.

4,448,253

MODERATED BOROHYDRIDE-INDUCED RESERVOIR DEWATERING

Jeffrey G. Southwick, and Lee N. Morgenthaler, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Mar. 10, 1983, Ser. No. 473,887

Int. Cl.³ E21B *43/25*

U.S. Cl. 166—300 **7 Claims**

1. A well treating process for improving the productivity of an oil or gas-productive reservoir by removing water from the reservoir without fracturing the reservoir comprising:

dissolving an alkali metal borohydride in an aqueous alkaline solution which has a pH of at least about 10 and contains at least one dissolved compound which reacts

relatively slowly with water at the reservoir temperature to yield an acid capable of lowering the pH of the borohydride-containing solution;

flowing the borohydride-containing solution into the reservoir at a rate which is correlated with the composition of the solution so that a significant volume of the solution in which a significant portion of the borohydride has not yet reacted is displaced into the reservoir; and

after substantially all of the borohydride has reacted, initiating the production of fluid from the well.

4,448,254

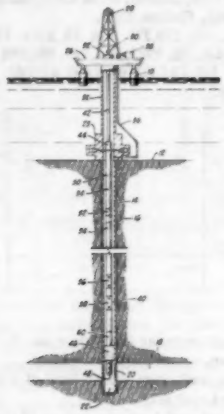
TESTER VALVE WITH SILICONE LIQUID SPRING

Burchus Q. Barrington, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Continuation-in-part of Ser. No. 354,529, Mar. 4, 1982. This application Sep. 14, 1982, Ser. No. 417,947

Int. Cl.³ E21B *34/06*

U.S. Cl. 166—373 **33 Claims**



1. A valve apparatus, comprising:

a housing having a flow passage disposed therethrough;

flow valve means disposed in said housing and movable between a closed position wherein said flow passage is closed, and an open position wherein said flow passage is open;

power mandrel means, disposed in said housing, said power mandrel means being operatively associated with said flow valve means for moving said flow valve means from its closed position to its open position upon movement of said power mandrel means in a first direction longitudinally within said housing from a first position to a second position;

a power piston included in said power mandrel means, said power piston including:

a main piston having a first differential area; and

a booster piston means, operably associated with said main piston, for initially providing an additional differential area to said first differential area of said main piston, and for thereby providing an additional initial force for moving said flow valve means from its closed position to a partially open position;

power passage means disposed in said housing for transmitting pressure from a well annulus external of said housing to a first side of said power piston;

a first chamber disposed in said housing and filled at least partially with a compressible liquid, a second side of said power piston being in fluid communication with said first chamber so that pressure from said compressible liquid is transmitted to said second side of said power piston;

a second chamber disposed in said housing;

a floating piston means disposed in said second chamber and dividing said second chamber into a first zone and a second zone;

an equalizing passage means, disposed in said housing for transmitting said pressure from said well annulus external of said housing to said second zone of said second chamber;

a pressurizing passage communicating said first chamber with said first zone of said second chamber;

a first back pressure check valve means, disposed in said pressurizing passage, for allowing liquid to flow from said first zone of said second chamber through said pressurizing passage into said first chamber when a pressure in said first zone of said second chamber exceeds a pressure of said compressible liquid in said first chamber by a first predetermined value, and for preventing liquid from flowing from said first chamber through said pressurizing passage to said first zone of said second chamber;

a depressurizing passage communicating said first chamber with said first zone of said second chamber; and

a second back pressure check valve means, disposed in said depressurizing passage, for allowing liquid to flow from said first chamber through said depressurizing passage into said first zone of said second chamber when the pressure in said first chamber exceeds the pressure in said first zone of said second chamber by a second predetermined value, said second predetermined value being greater than said first predetermined value, and for preventing liquid from flowing from said first zone of said second chamber through said depressurizing passage into said first chamber.

4,448,255

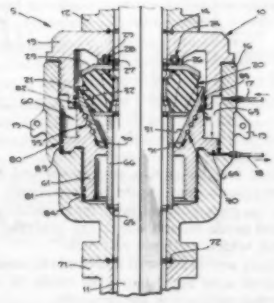
ROTARY BLOWOUT PREVENTER

Donald U. Shaffer, 2850 E. Coronado St., Anaheim, Calif. 92806, and Gary M. Oulrey, 540 Traffic Way, Arroyo Grande, Calif. 93420

Filed Aug. 17, 1982, Ser. No. 408,764

Int. Cl.³ E21B *33/06*

U.S. Cl. 166—387 **14 Claims**



1. In a blowout preventer having a housing, a metal reinforced, elastomeric, annular packing and a hydraulic wedging piston the improvement comprising:

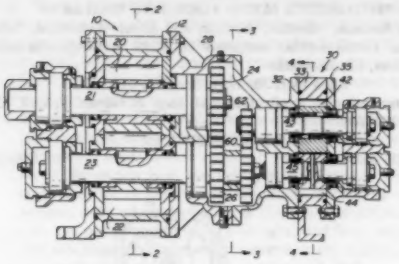
a packing engaging and contracting element and bearing means for rotatably mounting the packing engaging and contracting element between said packing and said hydraulic wedging piston.

4,448,256

FOAM LIQUID PROPORTIONER

H. Alfred Eberhardt, Paoli; Kenneth F. Hoffman, Collegeville, and Raymond R. Petersen, Meadowbrook, all of Pa., assignors to Hale Fire Pump Company, Conshohocken, Pa.

Filed Jan. 28, 1982, Ser. No. 392,710
Int. Cl.³ A62C 35/00
U.S. Cl. 169—15 5 Claims



1. In a foam liquid proportioner for introducing foam producing liquid into a stream of water including

a water motor driven by the flow of water discharged from a pressurized source and flowing through a flow path containing the water motor, and

a foam liquid pump in a flow path which bypasses the water motor and arranged to inject a metered amount of foam liquid into said stream of water,

said water motor having a rotor means including a rotating shaft driven by the water flowing through the water motor,

said foam liquid pump having rotor means including a rotating shaft,

the improvement comprising

step-up gear means in a drive connection between said water motor rotor means and said foam liquid pump rotor means for causing said foam liquid pump rotor means to rotate at a speed which is much faster than speed of rotation of said water motor rotor means to reduce the ratio of the liquid slippage flow to the total flow of said foam liquid pump, said step-up gear means including a large gear mounted on said rotating shaft of said water motor and a small gear mounted on said rotating shaft of said foam liquid pump in engagement with said large gear which said small gear is to be driven thereby at a stepped-up RPM,

and a mounting head means for mounting said foam liquid pump adjacent to said water motor with the longitudinal axis of said rotating shaft of said water motor being parallel to and spaced apart from the longitudinal axis of said rotating shaft of said foam liquid pump, said mounting head means defining a gear chamber between said water motor and said foam liquid pump,

said rotating shaft of said water motor having an extended portion extending into said gear chamber and having said large gear mounted thereon, said rotating shaft of said foam liquid pump having an extended portion extending into said gear chamber and having said small gear mounted thereon for direct engagement with said large gear.

4,448,257

SOIL-SEPARATING ASSEMBLIES

Douglas C. McRae, Penicuik, Scotland, assignor to National Research Development Corporation, London, England

Filed Jul. 9, 1982, Ser. No. 396,684
Int. Cl.³ A01D 13/00, 17/00
U.S. Cl. 171—127 11 Claims

1. For use with a crop lifting means for a root-crop, a soil separating assembly comprising a conveyor sieve for transporting the crop rearwardly from the crop-lifting means to another part of the assembly and area control means for varying the effective sieving area of the conveyor sieve by varying

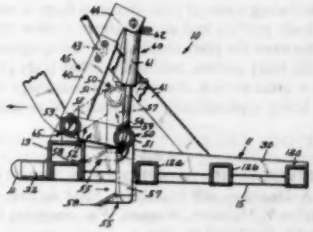
the effective length of the conveyor sieve, said assembly further including agitation means for imparting mainly horizontal oscillations to that part of the sieve leading rearwardly from said lifting means to said area control means.

4,448,258

SOIL LEVELING APPARATUS

Orlan H. Mork, 6029 225th St. West, Farmington, Minn. 55024

Filed Jan. 12, 1981, Ser. No. 224,458
Int. Cl.³ A01B 49/02
U.S. Cl. 172—197 21 Claims



12. Apparatus for leveling soil and the like comprising:

a frame including a plurality of elongated ground-engaging members fixedly attached with the longitudinal axes of said members extending generally transverse to the direction of motion, said members having lower surfaces lying generally in the same plane;

a pair of side rail members, each side rail member being of continuous construction connected to said ground-engaging members and extending substantially normal thereto;

each said side rail member being of generally channel-like configuration with a top surface which slopes downwardly from the forwardmost ground engaging member, and downwardly depending inner and outer legs, the outer leg being substantially coplanar at its lower edge with the lower surfaces of said ground-engaging members, the lower edges of said outer legs generally having no slope relative to said forwardmost ground engaging member; and

connecting means rigidly attached to said frame for fastening said frame to a draft means for operation of said apparatus.

4,448,259

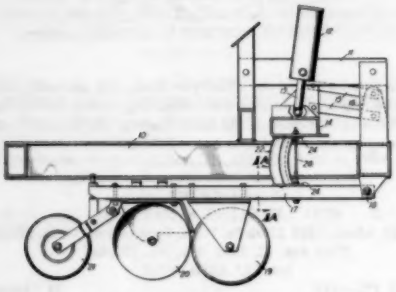
RUBBER SPRING FOR FURROW OPENER

Arthur J. Ford, Leesburg, Ga.; Patrick Kuhn, and William D. Long, both of Bismarck, N. Dak., assignors to Lilliston Corporation, Albany, Ga.

Filed Apr. 19, 1982, Ser. No. 369,571
Int. Cl.³ A01C 5/06
U.S. Cl. 172—462 12 Claims

1. A rubber spring device for a furrow opener comprising a solid rubber body portion having opposite end faces which diverge when said body portion is in a relaxed state, the body portion being elongated between its end faces and being

adapted to function as a resilient column in response to forces applied to its end faces along its longitudinal axis, and adjustable tension means connected between said end faces to draw the end faces into parallel relationship and to cause initial prestressing of the spring device by effecting initial arcuate deflection of the body portion in one direction across the



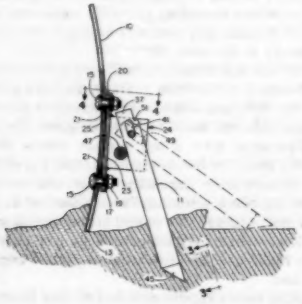
longitudinal axis of the body portion, said adjustable tension means including a pair of plate elements fixed to said end faces of the body portion and an adjustable tension element connected between the plate elements and being spaced from one side of the body portion, said solid rubber body portion being arcuate in cross section, the cross-sectional shape of said body portion being approximately one-quarter of an annulus.

4,448,260

PIVOTAL BLADE SPIKES FOR TRACTORS

Wayne A. Harmsen, 607 Morris St., Fond du Lac, Wis. 54935, and Arlyn V. Harmsen, Waupun, Wis., assignors to Wayne A. Harmsen, Fond du Lac, Wis.

Filed Apr. 7, 1982, Ser. No. 366,311
Int. Cl.³ E02F *3/12*
U.S. Cl. 172—777 **7 Claims**



1. In combination with an earth-working vehicle, a suspension system operatively connected to the vehicle, a blade joined to the suspension system, and means for actuating the suspension system, at least one earth-loosening attachment comprising:

a. a bracket mounted to the back side of the blade;

b. a pivot pin supported in the bracket;

c. a spike having a pointed lower end and an upper end, the spike containing an elongated aperture near the upper end for receiving the pivot pin so that the spike is cradled in the bracket and is suspended from the pivot pin for pivotal motion thereabout;

d. a reaction pin supported in the bracket; and

e. at least one adjusting bushing coaxial with and supported by the reaction pin for adjustably limiting the pivotal motion of the spike in one direction,

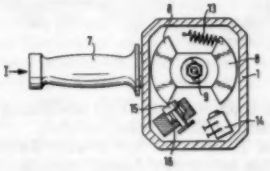
so that the spike has earth-loosening engagement at a predetermined angle with the earth during backward motion of the vehicle and has dragging action on the surface of the earth during forward motion of the vehicle.

4,448,261

MOTORIZED HAND TOOL FOR DRILLING

Heinz Kousek, Muntlix, Austria, and Ernst Wohlwend, Nendeln, Liechtenstein, assignors to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed Oct. 30, 1981, Ser. No. 316,739
Claims priority, application Fed. Rep. of Germany, Oct. 31, 1980, 3041099
Int. Cl.³ B23Q *5/00*
U.S. Cl. 173—12 **7 Claims**



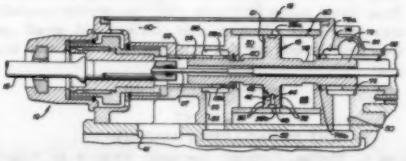
1. A manually guided, motorized hand tool for drilling and/or percussive drilling comprising a housing, a handle attached to said housing, said housing having a drilling axis extending therethrough, a shaft located within said housing and disposed parallel to the drilling axis, means for mouting a drilling tool on the drilling axis of said housing so that the drilling tool can be rotated, a mass mounted on and rotatable relative to said shaft in a plane extending substantially perpendicular to said shaft so that said mass is rotatable relative to said housing in a plane extending substantially at right angles to the drilling axis, said mass has a moment of inertia so that when a moment of reaction about said shaft rotates said housing said mass remains stationary whereby relative movement takes place between said mass on said shaft and said housing, a switch located within and mounted on said housing and operable by said mass when said mass experiences a predetermined angular displacement relative to said housing, and said switch arranged to interrupt the power supply to said drive means when said switch is operated by said mass.

4,448,262

PNEUMATIC HAMMER

Robert R. Vincent, Springfield, Mo., assignor to Cooper Industries, Inc., Houston, Tex.

Filed May 19, 1982, Ser. No. 379,772
Int. Cl.³ B23Q *5/00*
U.S. Cl. 173—16 **4 Claims**



1. In a pneumatic hammer for repeatedly inpacting a tool, said hammer having a housing which has an inner wall which defines a chamber, a piston reciprocally carried within the chamber and having a wall which slidably engages the chamber wall, said piston defining an impact subchamber of the

chamber wherein pneumatic fluid supplied under pressure to the impact subchamber from an outside source drives the piston to impact the tool, the piston also defining a retracting subchamber of the chamber wherein pneumatic fluid supplied under pressure to the retracting subchamber drives the piston back from the tool, an exhaust port in the chamber wall which provides an outlet from the chamber, said piston having a first position wherein the exhaust port is coupled to the impact subchamber so as to exhaust pneumatic fluid under pressure from the impact subchamber, a second position wherein the exhaust port is coupled to the retracting subchamber so as to exhaust pneumatic fluid under pressure from the retracting subchamber, and a third position intermediate the first and second positions in which the exhaust port is covered by the piston, the improvement comprising:

a passageway located in the piston and coupled to one of the subchambers, said passageway having an outlet located in the piston wall, which registers with the exhaust port when the piston is in the intermediate position wherein only said one of the two subchambers is coupled to the exhaust port when the piston is in the intermediate position and pneumatic fluid may be exhausted from only said one subchamber to prevent the piston from stalling in the intermediate position.

4,448,263

DRILLING APPARATUS

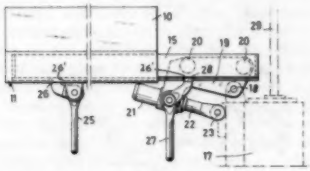
Kunibert Becker, Werl; Rudiger Kirchbrucher, Dortmund-Brackel, and Burckhard Elsner, Lunen, all of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Lunen, Fed. Rep. of Germany

Filed Nov. 24, 1981, Ser. No. 324,462

Claims priority, application Fed. Rep. of Germany, Nov. 29, 1980, 3045047

Int. Cl.³ E21C *11/00*

U.S. Cl. 173—34 **20 Claims**



1. In a mineral mining installation for use in an underground mine, the installation comprising a mine roof support assembly and apparatus for drilling bores, the roof support assembly comprising a plurality of roof support units positioned side-by-side, each of the roof support units having at least one roof bar, the improvement comprising an elongated track arranged on the roof bars of the roof support units, an elongated beam mounted on and movable along the length of the track, a trolley mounted on and movable along the length of the beam, said drilling apparatus comprising a drilling device which is pivotally mounted on said trolley, and means for releasably securing said beam at selected locations along said track and for releasably securing said trolley at selected locations along said beam.

4,448,264

GROUND ROD DRIVING POLE

Jackie W. Peyton, 911 Husbands Rd., Paducah, Ky. 42001

Filed Nov. 27, 1981, Ser. No. 325,592

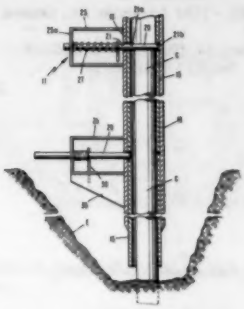
Int. Cl.³ B25D *1/00*

U.S. Cl. 173—52 **9 Claims**

1. A driving pole assembly for a ground rod or the like comprising:

a hollow pole for receiving the rod, and

adjustable means extending across the interior of said pole at spaced locations along the pole to selectively provide a stop for the top of said rod, whereby said rod may be



driven in increments into the ground upon applying repeated series of downward forces to said pole.

4,448,265

ELECTRICAL COMPONENT MEMBER WHICH IS MOUNTED IN A HOUSING CENTERED AND ADJUSTED

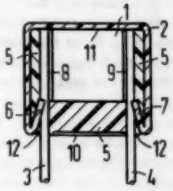
Tassilo Kodal, Oppersdorf, and Hubert Kraus, Regensburg, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Münich, Fed. Rep. of Germany

Filed Mar. 12, 1982, Ser. No. 357,658

Claims priority, application Fed. Rep. of Germany, Aug. 14, 1981, 3132243

Int. Cl.³ H05K *5/06*

U.S. Cl. 174—52 PE **1 Claim**



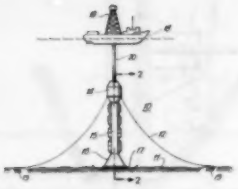
1. An electrical component comprising an electrical component member mounted centered and adjusted in a cup-shaped housing having a rectangular cross section, said housing having an opening through which lead wires from the electrical component member protrude in the same direction, and hardened sealing compound securing the electrical component member in said cup-shaped housing, said cup-shaped housing being of rectangular cross section and having, at least on two opposite sides thereof, integrally formed tabs consisting of the same material as that of said cup-shaped housing, said tabs being bent into the interior of said cup-shaped housing and resiliently clamping the electrical component member in said housing, said tabs being encased in said hardened sealing compound and serving as centering and adjusting means for said electrical component member, said tabs having a V-shape and forming channels wherein said lead wires of said component member extend.

4,448,266

DEEP WATER RISER SYSTEM FOR OFFSHORE DRILLING

Harold L. Potts, 2201 - 1081 Ambleside Dr., Ottawa, Ontario, Canada K2B 8C8

Filed Nov. 14, 1980, Ser. No. 206,948
Int. Cl.³ E21B *7/128*
U.S. Cl. 175—7 **20 Claims**



1. A deep water riser system for offshore drilling and well completion comprising, in combination:

buoyancy means adapted to be anchored at a predetermined depth in support of a submerged load;

riser coupling means including closure means having an inlet and an outlet attached to said buoyancy means;

sub-riser means connected to said inlet and depending from the buoyancy means for communicating said coupling means with a well bore;

riser means connected to said outlet for communicating the well bore with a floating drill rig positioned thereabove; and guying means including cable means having lengths of predetermined positive, neutral and negative buoyancy adapted to anchor said buoyancy means at a depth established by the sub-riser means and to stabilize said system by producing a restoring force for controllably limiting lateral excursions of said buoyancy means and corresponding pivotal motions of said sub-riser means.

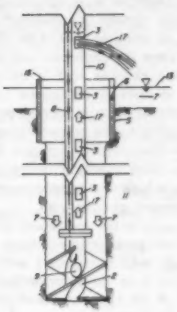
4,448,267

DOOR DRILLING KELLY

Russell C. Crawford, III; George M. Crawford, and Russell C. Crawford, Jr., all of P.O. Box 27054, Memphis, Tenn. 38127

Filed Aug. 30, 1982, Ser. No. 412,605
Int. Cl.³ E21B *17/00*
U.S. Cl. 175—218 **1 Claim**

1. A hollow drilling kelly for reverse circulation drilling comprising a hollow metal tubing having a series of openings longitudely spaced therealong, each of said openings having door means normally closing said openings to allow retention of fluids within said kelly and means associated with said doors for allowing said doors to be sequentially opened and closed



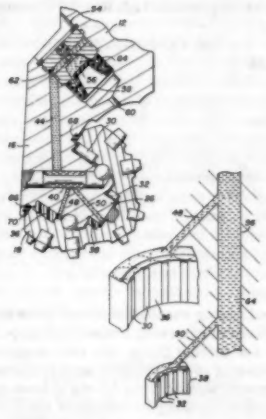
for discharging fluid from and retaining fluids within said kelly, respectively.

4,448,268

ROCK BIT WITH BEARING LUBRICANT RESERVOIR

Dennis D. Fuller, Duncanville, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Jul. 27, 1981, Ser. No. 286,826
Int. Cl.³ E21B *10/22*
U.S. Cl. 175—228 **5 Claims**



1. A rotary rock bit comprising:

a bit body defining a pressurized fluid flow path therethrough and having at least one arm terminating at its free end in an axle portion;

a rotatable cutter member having an internal open cavity for receipt therein of said axle portion in radial spaced relation to define an annular bearing cavity;

annular bearing and cage assembly means disposed in said annular cavity and comprising:

at least one annular array of rolling load bearing elements, with all bearing elements thereof retained in said annular array by being caged in and in intimate contact with a permeable porous plastic material having a flowable lubricant in the pores thereof and providing a lubricating cage for said rolling bearing elements, said at least one annular array of rolling bearing elements and plastic material substantially filling the annular bearing cavity adjacent the initial portion of said open cutter cavity; and

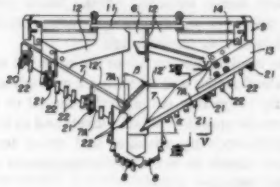
a lubricant reservoir in said body and lubricant passages therefrom to said bearing cavity terminating adjacent said cage, lubricant in said reservoir and passages and means for pressurizing said lubricant to force lubricant to flow from said reservoir to adjacent said permeable porous plastic material to replenish through capillary draw therein the lubricant lost from said pores of said material during use.

4,448,269

CUTTER HEAD FOR PIT-BORING MACHINE

Yasuaki Ishikawa, Ami; Shuichi Ajiro, and Masami Wada, both of Chiyoda, all of Japan, assignors to Hitachi Construction Machinery Co., Ltd., Tokyo, Japan

Filed Oct. 27, 1981, Ser. No. 315,650
Int. Cl.³ E21B *10/28, 10/16*
U.S. Cl. 175—335 **8 Claims**



1. A rotatable cutter head for a pit boring machine used in reverse circulation drilling, comprising:

cutter arrays each including a rotary cutter means and a plurality of drag cutters disposed at circumferentially spaced positions on said cutter head, said drag cutters having the cutting ends lying generally in a conical plane having the axis coaxial with the axis of rotation of said cutter head, said cutter arrays lying along a spiral line on said conical plane in which the cutting ends of said drag cutters lie and extending from the outer circumferential edge of said plane to the center of said plane, the drag cutters succeeding the rotary cutter means in each array, the respective rotary cutter means having the axes of rotation thereof at an acute angle relative to a radius perpendicular to the axis of rotation of the cutter head, said angle lying in a plane perpendicular to the axis of the cutter head,

said rotary cutter means each having cutting teeth around the circumference thereof and the tip of each cutting tooth of each rotary cutter means projecting beyond the plane in which the cutting ends of said drag cutters lie.

4,448,270

VARIABLE DIAMETER EARTH BORING BIT

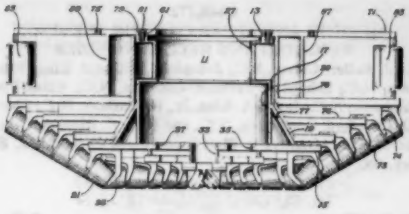
Robert J. Buske, Corsicana, Tex., assignor to Hughes Tool Company, Houston, Tex.

Filed May 10, 1982, Ser. No. 376,793
Int. Cl.³ E21B *10/20*
U.S. Cl. 175—342 **6 Claims**

1. An earth boring bit adapted to be connected in a drill string for cutting a shaft in the earth, comprising:

a central bit body which is adapted to be driven to cut a shaft, said central bit body having an outer conical surface thereon and a hollow interior for circulating drilling fluids; and

an outer ring segment carried on said central bit body, said outer ring segment being connectable in said drill string whereby torque transmitted to said drill string is transmitted to said outer ring segment, and said outer ring segment having a conical surface for matingly engaging said central bit body conical surface, and pre-load means for detachably engaging said outer ring segment to said central bit body to assure drivable contact between said mating conical surfaces whereby torque transmitted to said outer ring segment is transmitted through said mating conical



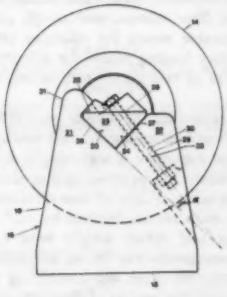
surfaces to drive said central bit body to cut a shaft in the earth.

4,448,271

EARTH BORING DEVICE

Erik A. Persson, Sandviken, Sweden, assignor to Santrade Ltd., Lucerne, Switzerland

Filed Nov. 13, 1981, Ser. No. 321,260
Claims priority, application Sweden, Mar. 31, 1981, 8102049
Int. Cl.³ E21B *10/10*
U.S. Cl. 175—364 **1 Claim**



1. A roller cutter assembly for rotary boring the face of an earth formation, comprising:

a boring head having a mounting face,

a roller cutter including a bearing shaft having first and second supporting faces which are mutually non-parallel,

mounting means carried on said mounting face and supporting ends of said shaft, said mounting means including first and second arm portions extending away from said mounting face, said first and second arm portions respectively including third and fourth supporting faces which engage said first and second supporting faces, respectively, to prevent rotation of the bearing shaft relative to said mounting means,

said first, second, third, and fourth supporting faces being non-parallel relative to said mounting face, and

a bolt extending through a hole in said bearing shaft for clamping said first and second supporting faces against said third and fourth supporting faces, respectively, said bolt being arranged such that its longitudinal axis intersects said second and fourth supporting faces,

said first arm portion including a cap portion having a fifth supporting face which faces generally in the direction of both said fourth supporting face and said mounting face and is engageable with said bearing shaft to prevent independently of said bolt, movement of said bearing shaft in a direction perpendicularly away from said mounting face

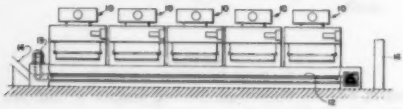
and prevent, independently of said bolt, rotation of said bearing shaft relative to said mounting means.

4,448,272

METHOD AND APPARATUS FOR FEEDING, WEIGHING AND RELEASING FIBER

Alex J. Keller, Clover, S.C.; Joseph R. Williams, Kings Mountain, N.C.; Erhard A. Fechner, Gastonia, N.C.; Akiva Pinto, Gastonia, N.C.; James A. King, Jr., Greensboro, N.C.; Charles D. Crawford, Burlington, N.C., and Riley C. Maness, Greensboro, N.C., assignors to Platt Saco Lowell Corporation, Easley, S.C.

Filed Oct. 9, 1981, Ser. No. 310,213
Int. Cl.³ G01G *23/22, 19/52, 13/24*
U.S. Cl. 177—1 **8 Claims**



1. An apparatus for feeding, weighing and releasing a predetermined quantity of fiber to a conveyor or the like in reoccurring cycles whereby the quantity of fiber released in each cycle is maintained at an essentially constant and preselected level, said apparatus including weigh pan means for receiving and collecting said fiber therein, said weigh pan means having selectively operable means for releasing the fiber collected therein, and fiber feeding means for selectively delivering a quantity of fiber to said weigh pan means, the improvement comprising:

(a) means for sensing the weight of said fiber collected in said weigh pan means during each said cycle and generating a signal indicative of said weight; and

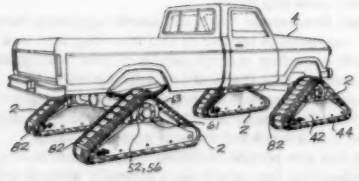
(b) control means for receiving said generated signal, determining the actual weight of fiber released from said weigh pan after each release thereof by said releasing means, comparing said actual weight with a constant preset weight corresponding to the weight desired to be released during each said cycle, and controlling said fiber feeding means to vary the weight of fiber delivered to said weigh pan means during the next said cycle by an amount that is a predetermined fractional portion of the difference between said actual weight and said preset weight for the immediately preceding cycle.

4,448,273

ENDLESS TRACK ATTACHMENT FOR A VEHICLE

Louis C. Barbieri, Seattle, Wash.

Filed Dec. 18, 1981, Ser. No. 332,087
Int. Cl.³ B62D *55/04*
U.S. Cl. 180—9.21 **17 Claims**



1. A track laying attachment comprising:

a shaft having inner and outer ends and a mounting flange at its inner end adapted to be secured to a wheel hub of a vehicle, so as to be rotatable with the wheel hub, said outer end of the shaft being threaded;

a sprocket wheel secured to the shaft, so as to rotate with the shaft, said sprocket wheel comprising evenly spaced apart, tooth-receiving sockets at its periphery bounded by bearing surfaces;

a track supporting frame including an upper portion and a lower portion;

mounting means for mounting the shaft on the upper portion of the frame; said mounting means including a pillow block mount on each side of the sprocket wheel, one of such pillow block mounts including a threaded member in threaded engagement with the outer end of the shaft, and bearing means engaging the shaft, which bearing means comprises antifriction bearing means housed within each pillow block mount, each such antifriction bearing means surrounding the shaft and including a portion that rotates with the shaft and a non-rotating portion;

idler wheel means mounted on the lower portion of the frame, said idler wheel means including portions defining a tooth-receiving passage; and

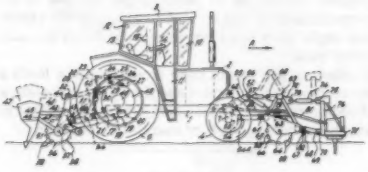
an endless track extending about the sprocket wheel and the idler wheel means and including a multiplicity of radially inwardly projecting drive teeth adapted to roll into and out from the sprocket wheel sockets and to travel through the tooth-receiving passage, said drive teeth being of sufficient depth to prevent disengagement of the track from the sprocket wheel.

4,448,274

VEHICLE

Cornelis van der Lely, 7 Brüschenrain, Zug, Switzerland

Filed Mar. 17, 1980, Ser. No. 131,043
Claims priority, application Netherlands, Mar. 21, 1979, 7902200; Mar. 21, 1979, 7902199; Mar. 21, 1979, 7902198
Int. Cl.³ B60B *39/00*
U.S. Cl. 180—15 **11 Claims**

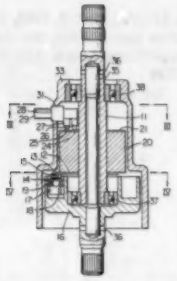


1. A vehicle which is an agricultural tractor comprising a frame, an axle connected to said frame so as to be pivotable with respect thereto about a horizontal pivotal axis lying in the tractor's longitudinal plane of symmetry, upwardly extending pivot axes on said axle on each side of said plane of symmetry, a pair of wheels for supporting the vehicle on the ground mounted on said axle so as to be steerable about said upwardly extending pivot axes, at least one lifting device also mounted on said axle, a rotary support means connected to said lifting device, said lifting device being pivotable together with said axle relative to said pivotal axis, powered extensible means disposed between said axle and said rotary support means which is adapted to exert downwardly directed force from said axle to said rotary support means which shifts support for said axle from said pair of wheels onto said rotary support means and reduces the pressure applied by said pair of wheels on the ground, and said rotary support means having coupling means to which further equipment can be hitched.

4,448,275
TORQUE SENSOR

Junji Kitagawa; Shigeyuki Akita, both of Okazaki; Norimichi Kasegawa, Susono, and Akira Nakamura, Shizuoka, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Nov. 27, 1981, Ser. No. 325,484
Claims priority, application Japan, Nov. 28, 1980, 55-168709; Dec. 26, 1980, 55-186270
Int. Cl.³ B62D 5/04
U.S. Cl. 180—79.1 6 Claims



1. A torque sensor comprising:

a first rotor having two kinds of first electrodes;

a second rotor having a second electrode, said second electrode facing said two kinds of first electrodes at a predetermined distance therefrom and coupled thereto electrically by electrostatic capacitance coupling and mechanically by a torsion spring; and

an electric processing circuit for impressing electric signals of opposite phases to said respective kinds of first electrodes and generating a signal corresponding to the magnitude of twist of said torsion spring from a signal generated from said second electrode according to the magnitude of electrostatic capacitance corresponding to the overlap area of one kind of said first electrodes and said second electrode, said overlap area being variable with the rotation of both said rotors relative to each other caused by said torsion spring,

wherein each kind of said first electrodes are comb-shaped electrodes connected to each other and said second electrode is a comb-shaped electrode the pitch of which is double the pitch of said comb-shaped first electrodes.

4,448,276
CLUSTERED SWITCH MOUNTING MEANS FOR USE IN AUTOMOTIVE VEHICLES

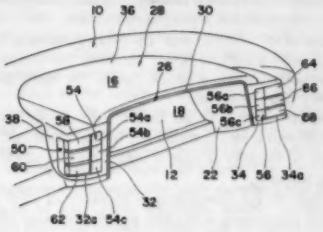
Hiromasa Nakamoto, and Takeshi Miyoshi, both of Hiroshima, Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Jun. 28, 1982, Ser. No. 392,797
Claims priority, application Japan, Jun. 30, 1981, 56-102613; Jun. 30, 1981, 56-102614
Int. Cl.³ B60K 37/06
U.S. Cl. 180—90 10 Claims

1. An apparatus for mounting various switches used to control different mechanisms in an automotive vehicle, which apparatus comprises:

a meter housing mounted on an instrument panel rearwardly of a steering wheel as viewed from a driver's seat inside the automobile vehicle, said meter housing comprising a pair of opposite lateral portions, said lateral portions protruding from the instrument panel a certain distance towards the steering wheel, but spaced from said steering wheel, at least one of said lateral portions having a chamber defined therein for accommodating at least some of the various switches therein, a portion of the wall defining the chamber being inwardly recessed to define a pocket;

manipulatable switch knobs operatively connected to the switches, said switch knobs being accommodated in said pocket one above the other in a direction generally perpendicular to the longitudinal direction of the instrument panel and protruding widthwise of the vehicle in a plane



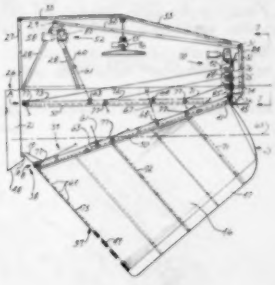
generally parallel to the plane of rotation of the steering wheel in closely adjacent relation to each other, each of said switch knobs being supported for movement in a plane generally perpendicular to the plane of rotation of the steering wheel; and

means positioned within the chamber for transmitting the movement of the switch knobs to the associated switches to control said associated switches, respectively.

4,448,277
SKIRTS AND SKIRT HANDLING FOR AIR CUSHION VEHICLES

Sherman B. Wetmore, Westminster, and Gordon D. Knorr, Irvine, both of Calif., assignors to Global Marine, Inc., Los Angeles, Calif.

Filed Sep. 14, 1981, Ser. No. 301,726
Int. Cl.³ B60V 1/16
U.S. Cl. 180—127 14 Claims



1. A method for replacing a skirt segment of a segmented skirt for an air-cushion vehicle in which the skirt is disposed circumferentially of a body of the vehicle and is composed of a plurality of segments, each of which is connected to an enclosed plenum structure which extends peripherally of the vehicle body, the method comprising the steps of:

(a) from within the plenum structure,

(i) disconnecting from the plenum structure a skirt segment of interest, and

(ii) placing the disconnected segment at a desired location aboard the vehicle;

(b) providing a replacement skirt segment at a selected location within the plenum structure;

(c) moving the replacement segment within the plenum structure from the selected location to the location at

which the segment of interest was connected to the plenum structure; and

(d) from within the plenum structure connecting the replacement segment to the plenum structure in place of the segment removed in performance of step (a)(i).

7. An air cushion vehicle comprising:

a vehicle body;

a plenum structure carried by and projecting laterally from the body around a periphery thereof;

flexible skirt means around the body periphery for cooperation with a surface below the body for defining and substantially sealing a space below the body between the body and the surface;

means for supplying air under pressure to the space for establishing and maintaining in the space sufficient pressure to support at least a major portion of the weight of the vehicle,

the skirt means comprising a plurality of skirt assemblies, each comprising a flexible, air-impermeable skirt segment and a substantially rigid support frame for the segment, each assembly having an outer end pivotally connected to the plenum structure and an inner end adjacent the body; and

selectively operable means operable for moving the inner ends of the frames, and of the skirt segments carried thereby, between an upper retracted position and a lower deployed position relative to the body.

4,448,278

LAND VEHICLE

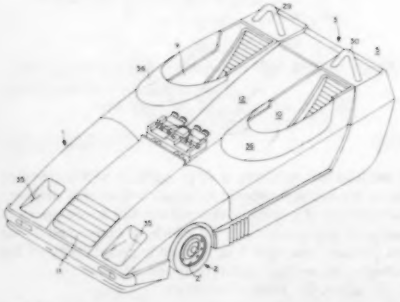
William J. Badsey, P.O. Box 70061, Bryanston 2021, South Africa

Filed Feb. 16, 1982, Ser. No. 348,682

Claims priority, application South Africa, Feb. 20, 1981, 81/1127

Int. Cl.³ B62D *61/06*

U.S. Cl. 180—210 **10 Claims**



1. A land vehicle having three wheel means, two of said wheel means being disposed adjacent the front of said vehicle and spaced apart from each other, said third wheel means being disposed adjacent the rear of said vehicle and located centrally thereof, said wheel means defining a wheel base for said vehicle, an engine unit mounted on said vehicle and located centrally thereof and within the wheel base, said vehicle including two passenger compartments, one of said passenger compartments being disposed on either side of the engine unit.

4,448,279

VEHICLE DRIVE UNIT

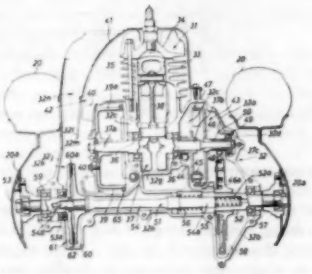
Masaki Watanabe, Urawa, and Goroei Wakatsuki, Fujimi, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 137,603, Apr. 7, 1980, Pat. No. 4,372,415. This application Apr. 9, 1982, Ser. No. 366,877

Claims priority, application Japan, Apr. 10, 1979, 54-43552; Apr. 20, 1979, 54-52999

Int. Cl.³ B60K *5/04*

U.S. Cl. 180—297 **11 Claims**



1. A drive unit for a vehicle having two juxtaposed drive wheels, comprising:

an engine;

an axle for supporting on the ends thereof said drive wheels, said axle comprising first and second drive portions arranged coaxially and in alignment with each other;

a final output gear operatively coupled with said engine and mounted on said first drive portion of said axle adjacent to one end thereof so as to rotate said first drive portion by power of said engine, said one end of said first drive portion supporting one of said drive wheels;

power transmitting means for coupling said second drive portion with said first drive portion so as to rotate said second drive portion upon rotation of said first drive portion, said power transmitting means including a pair of flanges mounted on said first and second drive portions in confronting relation, and means for frictionally engaging said flanges with each other, wherein said first and second drive portions may rotate relative to each other against the force of said friction engaging means;

said second drive portion having one of said flanges mounted at one end thereof, and supporting the other of said drive wheels at the other end thereof, said one end of said second drive portion being arranged substantially adjacent to said other drive wheel;

said engine being disposed between said final output gear and said power transmitting means;

a crankshaft extending parallel to said axle;

a clutch mounted on one end of said crankshaft, said clutch operatively cooperating with said final output gear so as to transmit said power of said engine to said final output gear; and

a flywheel mounted on the other end of said crankshaft, said engine being disposed between said clutch and said flywheel.

4,448,280

CARBURETOR

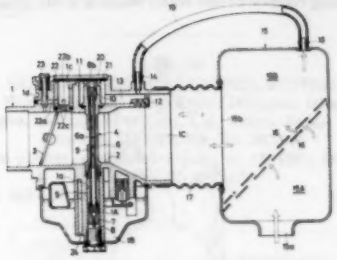
Haruo Endo, Matsuda, Japan, assignor to Mikuni Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 4, 1981, Ser. No. 318,197

Claims priority, application Japan, Dec. 7, 1980, 55-175118[U]

Int. Cl.³ B01H *13/36*

U.S. Cl. 181—229 **3 Claims**



1. A carburetor for internal combustion engines comprising a suction bore, an air introducing path having an air inlet opening within said suction bore, an air chamber made to communicate with said air introducing path, a main air jet and pilot air jet opening within said air chamber, a plug body fitted in said air inlet so as to interrupt the communication of the air introducing path with said suction bore, a suction silencer connected to said suction bore so as to introduce air into said suction bore and sectioned into a first chamber and second chamber with a plurality of silencing plates fitted within and means for making the second chamber communicate with said air introducing path, said first chamber having an air inlet.

4,448,281

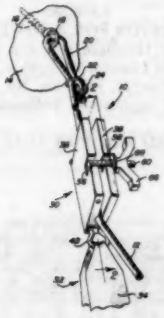
FIRE ESCAPE DEVICE

Jack B. Adams, Rte. 7, Box 68, Griffin, Ga. 30223

Filed Feb. 11, 1982, Ser. No. 348,004

Int. Cl.³ A62B *1/14*

U.S. Cl. 182—5 **1 Claim**



1. In a fire escape device having an elongated flexible member provided with an upper end capable of being anchored with respect to a building structure and having a length to depend to ground level or other safe level, that improvement comprising a slide and sling assembly in which the sling is connected to the slide and adapted to supportingly engage a person descending along the flexible member, said slide comprising a pair of generally rectangular plate members having inwardly facing and aligned grooves adapted to receive the flexible member and frictionally engage the flexible member, parallel hinge rods interconnecting adjacent side edges of the plate members, means connecting the hinge rods and sling and means adjustably interconnecting the opposite side edges of the plate members to vary the frictional gripping engagement of the plate members with the flexible member, said hinge rods being interconnected at their lower ends by a loop structure that is continuous with the rods, means anchoring the rods within longitudinal passages through the side edge portions of the plate members, thereby connecting the plate members for hinged movement, said loop structure forming said means connecting the hinge rods and sling, said means connecting the opposite side edges of the plate members including a notch in each of the plate members, a threaded bolt having one end pivotally mounted in the notch in one plate member and removably received in the notch in the side edge of the other plate member, an enlarged wing nut structure mounted on the bolt for engaging the outer surface of the plate member opposite to that having the bolt mounted therein for varying the frictional engagement between the plate members and flexible member, each of said plate members having substantially straight edges from end to end of each edge to render the plate members more rigid and less prone to flexing, said loop structure being disposed at the lower end of the slide and having a major internal diameter greater than the distance between the hinge rods to provide an enlarged loop receiving the sling, said means anchoring the hinge rods in the longitudinal passages through the plate members including a plate positioned on the hinge rods at the juncture with the loop structure in engagement with the lower edges of the plate members and an anchoring plate positioned over the upper ends of the rods in engagement with the upper edges of the plate members with the upper ends of the rods above the anchor plate being enlarged to retain the anchor plate on the hinge rods and retain the hinge rods in the longitudinal passages, the grooves receiving the flexible member being generally parallel to the hinge rods and intermediate the hinge rods and threaded bolt so that the sling engaged with the loop structure will not become entangled with the flexible member when the slide is moving along the flexible member.

4,448,282

LADDER FORMED AS A MULTIPLE-PURPOSE DEVICE

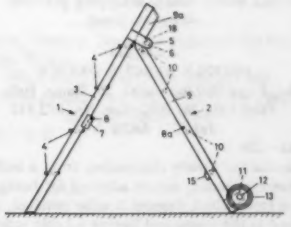
Ruedi Giezendanner, Rosenstrasse 16, CH-6010 Kriens, Switzerland

Filed Nov. 12, 1982, Ser. No. 441,293

Claims priority, application Switzerland, Nov. 13, 1981, 7314/81

Int. Cl.³ B62B *1/20*; E06C *1/397, 1/04*

U.S. Cl. 182—22 **5 Claims**



1. A ladder formed as a multiple-purpose device comprising first and second ladder elements including side beams having upper and lower ends, said elements combinable to form a stepladder or a leaning type ladder, wherein said first ladder element side beams include straps provided with holding means for positioning and securing said second ladder element to said first element when said second element side beams are inserted through said straps, upper side beam ends of said second ladder element being curved to serve as hand grips, said

second element side beams also comprising wheels attached at the lower end thereof, and a support plate including means for positioning said plate between said wheels whereby said second ladder element can be used as a hand truck.

4,448,283

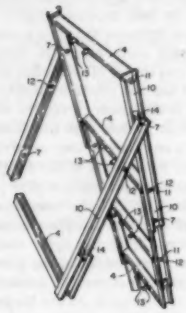
PORTABLE FOLD-UP LADDER

Salvador A. Marques, Barcelona, Spain, assignor to Andral Corporation, Williamsville, N.Y.

Continuation-in-part of Ser. No. 341,830, Jan. 22, 1982, and a continuation-in-part of Ser. No. 417,382, Sep. 13, 1982, Pat. No. 4,429,766. This application May 6, 1983, Ser. No. 492,487

Int. Cl.³ E06C *1/383*

U.S. Cl. 182—164 **20 Claims**



1. A portable folding lean to ladder comprising a plurality of u-shaped modules comprising a rung and two vertical portions, said modules movably connected to each other, and when opened becoming progressively narrower as they approach the top of said ladder, when folded said narrower modules fitting inside of the next wider modules, said modules except for said widest base module comprising in their lower portions a complete module locking means and a module hinge means, said locking means fixing said modules in a rigid manner when said ladder is extended and open, said locking means integral with said modules and comprising latches adapted to movably fit into and mate with an aperture located in the upper sections of said vertical portions of said modules, at least a section of the wider of said modules overlapping at their upper vertical portions with the bottom portions of the next adjacent narrower modules, and said locking means and said module hinge means provided within said overlapping portions.

4,448,284

PEOPLE RESCUE DEVICE

Renzo Ciabo, P.zza Stefano Iacini, 26, Rome, Italy

Filed Feb. 26, 1982, Ser. No. 352,412

Int. Cl.³ A62B *1/06*

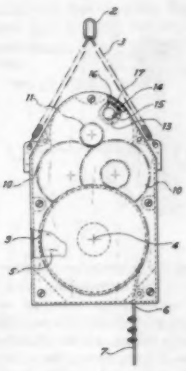
U.S. Cl. 182—234 **9 Claims**

1. In a device for slowly descending from a building, comprising a frame including means adapted for being connected to a location from which descent is to be initiated, a reel rotatably arranged in the frame and having a cable wound thereon with one end of the cable attached to the reel, and the other end projecting outwardly from the frame and with attaching means at the projecting end for latching thereonto for effecting a descent by causing unwinding of the cable from the reel, and brake means for regulating the speed of unwinding of the cable to regulate the speed of descent, the improvement wherein said brake means comprises:

gear means fixedly and coaxially attached within said frame to said reel for being rotated by rotating movement of said reel;

reducing overgear means comprising multiple gears interconnected within said frame to engage said gear means for being rotated thereby;

wheel means axially connected to one gear of said reducing overgear means for being rotated by rotation of said one gear, and having a plurality of radially arranged housings disposed about the circumference thereof, and a plurality of spherical steel bearings respectively arranged axially movable and rotatable in each one of said plural housings, wherein said reducing overgear means is adapted for causing rotation of said wheel means at a rate greater than



the rotation of said reel, when being unwound, sufficient to cause outward axial movement of each one of said bearings; and

a layer of friction causing material fixedly attached within said frame and surrounding the lateral surface of, and about the circumference of said wheel means and spaced therefrom at a distance less than the radius of said spherical steel bearings whereby upon rotation of said reel, said bearings are forced into direct contact with said layer of friction causing material to limit the speed of rotation of said reel in a continuously uniform manner.

4,448,285

LUBRICATOR FOR A POWER LOOM

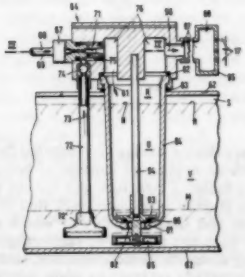
Herbert Burgbacher, Hilzingen, Fed. Rep. of Germany, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Nov. 20, 1981, Ser. No. 323,559

Claims priority, application Switzerland, Dec. 2, 1980, 8887/80

Int. Cl.³ D03J *1/00*; F16K *31/18*; F01M *1/00*

U.S. Cl. 184—55 A **8 Claims**



1. A pulse lubricator comprising an atomizer head,

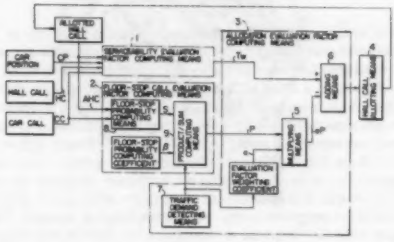
a nozzle in said head for forming a lubricant spray;
a macro-separator in said head for receiving a lubricant spray from said nozzle to separate large lubricant particles from the spray;
a lubricant catch basin sealingly connected to said atomizer head below said macro-separator to receive the separated large particles, and having a check valve at a lower end for releasing lubricant therefrom; and
a suction line extending from said head entirely outside said basin for drawing lubricant from a reservoir into said nozzle.

4,448,286

ELEVATOR GROUP CONTROL SYSTEM

Soshiro Kuzunuki, Katsuta, and Kotaro Hirasawa, Hitachi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 12, 1982, Ser. No. 397,046
Claims priority, application Japan, Jul. 15, 1981, 56-109216
Int. Cl.³ B66B *1//18*
U.S. Cl. 187—29 R **11 Claims**



1. An elevator group control system comprising a plurality of elevator cars arranged for movement across a plurality of floors of a building, hall call registering means disposed at each of the floors to originate a hall call for calling one of said elevator cars toward said floor, car call registering means disposed in each of said elevator cars for instructing target floors, allocation evaluation factor computing means for computing for each of said elevator cars an allocation evaluation factor indicative of the suitability of allocation of a newly originated hall call to said elevator car, and hall call allotting means for allotting said new hall call to the elevator car which is decided to be most suitable for the service in respect of the value of the allocation evaluation factor, said allocation evaluation factor computing means including means for weighting the output signal from floor-stop probability evaluation factor computing means relatively to the output signal from serviceability evaluation factor computing means, and varying means for varying the traffic demand and varying the value of the relative weight depending on the detected traffic demand.

4,448,287

CALIPER HOUSING IN A DISC BRAKE

Masayoshi Katagiri, Toyota, and Toshio Kondo, Okazaki, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota and Aisin Seiki Kabushiki Kaisha, Kariya, both of, Japan

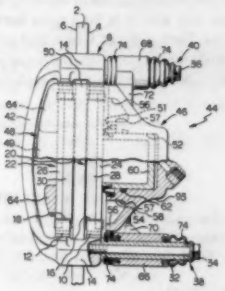
Filed Nov. 13, 1981, Ser. No. 320,979
Claims priority, application Japan, Nov. 21, 1980, 55-167722[U]
Int. Cl.³ F16D *55/00*
U.S. Cl. 188—73.31 **6 Claims**

1. A caliper housing of a disc brake for a vehicle including a disc rotor, a pair of brake pad assemblies disposed on opposite sides of the rotor, and a torque member fixed to the vehicle to support said caliper housing and the pad assemblies movably along an axis of rotation of the rotor, said caliper housing comprising:

a cylinder portion located on one side of the rotor and including a fan-shaped cylinder wall section which is formed with a cylinder having a cylinder bore open at one end thereof, said cylinder wall section having a sectorial external profile in cross section in a first plane perpendicular to said axis, and said cylinder wall section including a circumferential wall which defines said cylinder bore and which is substantially inscribed to said sectorial external profile;

a reaction portion located on the other side of the rotor opposite said cylinder portion; and

a bridging portion bridging said cylinder and reaction portions and cooperating with the same so as to constitute an integral, substantially saddle-shaped one-piece shell structure which straddles an outer peripheral portion of the



rotor and said pad assemblies, said bridging portion having a substantially circular arc configuration in cross section in a second plane parallel to said first plane, a quotient of a width of said bridging portion in said cross section divided by a thickness thereof being not less than 11; and

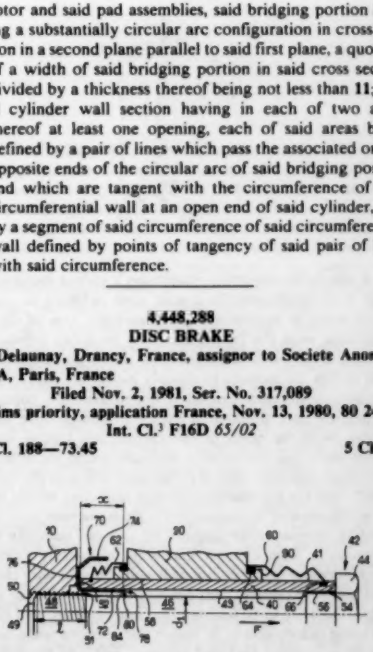
said cylinder wall section having in each of two areas thereof at least one opening, each of said areas being defined by a pair of lines which pass the associated one of opposite ends of the circular arc of said bridging portion and which are tangent with the circumference of said circumferential wall at an open end of said cylinder, and by a segment of said circumference of said circumferential wall defined by points of tangency of said pair of lines with said circumference.

4,448,288

DISC BRAKE

Jean Delaunay, Drancy, France, assignor to Societe Anonyme DBA, Paris, France

Filed Nov. 2, 1981, Ser. No. 317,089
Claims priority, application France, Nov. 13, 1980, 80 24138
Int. Cl.³ F16D *65/02*
U.S. Cl. 188—73.45 **5 Claims**



1. A disc brake having a caliper slidably mounted on a fixed support by means of at least one axial column slidingly received in an open bore formed in the caliper, said axial column comprising a cylindrical sleeve fixed to said fixed support by

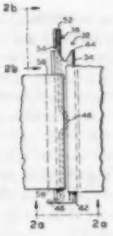
means of a bolt the stem of which is held in a bore inside the cylindrical sleeve and the threaded end of which is screwed into a hole tapped in said fixed support so as to hold the sleeve tight between the fixed support and the head of the bolt, protective bellows being mounted between said sleeve and the caliper on opposite sides of the latter, characterized in that the said column includes means of axial abutment associated with said sleeve in order to limit the axial displacements of the latter with respect to said caliper when the stem of said bolt is unscrewed from the fixed support said means of abutment include an abutment surface capable of coming to bear against a corresponding surface formed on the caliper when said sleeve is acted upon by an axial pull in the direction corresponding to the withdrawal of the said bolt, said means of abutment consist of a crown of U-shaped cross-section having an inner cylindrical sidewall which is mounted in the bore inside said sleeve and a flat annular end which is held tight between the end of the sleeve and the fixed support when said column is fixed to the latter, said abutment surface consisting of an extreme free edge of the outer cylindrical sidewall of said crown.

4,448,289

DISC BRAKE ASSEMBLY

Bert A. Gumkowski, and Peter J. Schreiner, both of South Bend, Ind., assignors to The Bendix Corporation, Southfield, Mich.

Filed Jun. 25, 1982, Ser. No. 392,057
Int. Cl.³ F16D 65/02
U.S. Cl. 188—73.45 **5 Claims**



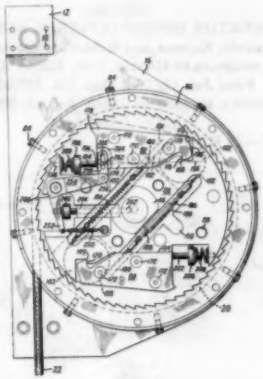
1. A disc brake assembly comprising a torque member with a pair of circumferentially spaced arms defining an opening therebetween to receive a caliper assembly, one of the arms cooperating with the caliper assembly to define substantially matching axially extending recesses, and a pin assembly disposed within the recesses to slidably mount the caliper assembly relative to the torque member, the pin assembly comprising a cylindrical part defining an axially extending bore and engageable with the walls of the caliper and torque member recesses and a resilient member disposed within the cylindrical part bore to yieldably oppose radial contraction of the cylindrical part, and the pin assembly further including means to prevent withdrawal of the pin assembly from the matching axially extending recesses, characterized by said pin assembly means comprising a wire element extending outwardly from said resilient member to define opposite ends for said wire element, one of said wire element ends defining a flexible latch to permit said pin assembly to be inserted into said recesses, said flexible latch being deformable to fit within said recesses when said pin assembly is inserted into said recesses, and said flexible latch returning to its free state when said pin assembly is disposed in its operative position within said recesses whereby both of said wire element ends cooperate with either said caliper assembly or said torque member to yieldably prevent withdrawal of said pin assembly from said recesses.

4,448,290

SAFETY DEVICE FOR A CABLE WOUND DRUM

Walter L. Reid, Jr.; Robert A. Van Stone, and Ralph L. Delano, all of Mattapoisett, Mass., assignors to Acushnet Company, New Bedford, Mass.

Filed Nov. 23, 1981, Ser. No. 324,006
Int. Cl.³ B60T 7/12
U.S. Cl. 188—82.7 **9 Claims**



1. A safety device for stopping cable payout from a drum when the rotational speed of the drum exceeds a predetermined level comprising:

(a) a housing;

(b) a drum rotatably mounted in said housing;

(c) a cable, said cable being adapted for winding on said drum upon rotation of said drum in one direction and for being paid out from said drum upon rotation of said drum in the opposite direction;

(d) a plate mounted on an end of said drum for rotation therewith;

(e) a ring-shaped member fixed on said housing, said ring-shaped member surrounding said plate and being in the plane thereof;

(f) a pawl pivotally mounted on said plate;

(g) said pawl having a first and a second position;

(h) said pawl in said first position enabling rotation of said drum;

(i) said pawl in said second position engaging said ring-shaped member to arrest rotation of said drum;

(j) said pawl being operative to pivot from said first position to said second position by inertial forces generated on said pawl by rotation of said drum;

(k) biased toggling means for holding said pawl under bias in said first position until the rotational speed of the drum attains a predetermined value;

(l) said toggling means thereafter holding said pawl under bias in said second position; and

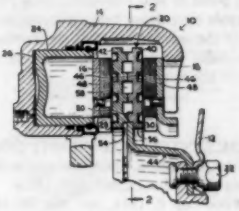
(m) said pawl having a tooth at one end thereof for engagement with said ring-shaped member when said pawl is in said second position the other end of said pawl being in abutting engagement with a shoulder of the plate when said pawl is in said second position, a knife edge on said pawl engaging an opposed shoulder in said recess of the plate when the pawl is in said first position.

4,448,291

ROTOR FOR A DISC BRAKE ASSEMBLY

Irving R. Ritsema, and Donald D. Johannesen, both of South Bend, Ind., assignors to The Bendix Corporation, Southfield, Mich.

Filed Dec. 21, 1981, Ser. No. 332,786
Int. Cl.³ F16D *65/12*
U.S. Cl. 188—218 XL **6 Claims**



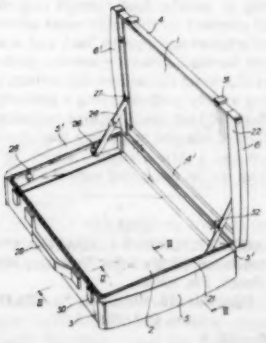
1. A rotor for a disc brake assembly having a pair of friction elements engageable with the rotor to retard rotation thereof, the rotor comprising at least a pair of stamped members with radially extending surfaces engageable with a pair of friction elements, the pair of stamped members cooperating to define a clearance therebetween permitting air flow through the rotor to readily convey thermal energy to an environment for the disc brake during braking, characterized in that each of said pair of stamped members includes a plurality of integrally formed projections extending axially toward opposing integrally formed projections of the other stamped member, the integral projections of a respective stamped member aligned with a plurality of depressions in a surface engageable with an associated friction element, said projections for securing together the pair of stamped members and cooperating to define said clearance and reduce axial deflection of said pair of stamped members into said clearance during braking over the radial dimension for said pair of stamped members.

4,448,292

KNOCKDOWN SUITCASE

Yacov Comfort, 4 Graetz St., Holon, Israel

Filed Jan. 19, 1981, Ser. No. 226,137
Claims priority, application Israel, Jul. 7, 1980, 60509
Int. Cl.³ A45C *3/02, 7/00*; B65D *8/00*
U.S. Cl. 190—107 **4 Claims**



1. A suitcase comprising

a bottom part having a bottom panel, two sidewalls, a front panel and a back panel,

a top part having a top panel, two sidewalls, a front panel and a back panel, characterized in that

said sidewalls of both said bottom part and said top part are made by casting or molding and include integrally formed corners between said sidewalls and said front and back panels and between said sidewalls and their respective bottom and top panels, and further include short flanges extending from said corners perpendicular to the length of the sidewalls and having means shaped to receive the ends of said front and back panels,

said front and back panels being separately formed profiled strips, shaped to receive their respective bottom and top panels and to engage said shaped means formed by said short flanges,

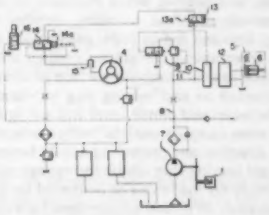
said bottom and top panels being plates.

4,448,293

PRESSURE-RESPONSIVE CONTROL FOR A POWER TRAIN OF THE TYPE HAVING A TORQUE CONVERTER EQUIPPED WITH A LOCKUP CLUTCH

Fujio Maeda, Komatsu, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Feb. 19, 1982, Ser. No. 350,348
Int. Cl.³ F16D *33/00*
U.S. Cl. 192—3.3 **4 Claims**



1. A hydraulic control system for a power train of the type including a torque converter for coupling a prime mover to a transmission having a plurality of hydraulically actuated shift clutches thereby to be conditioned for operation in a selected speed setting and in a selected direction, a hydraulically actuated lockup clutch for bypassing the torque converter and mechanically coupling the prime mover to the transmission, and pressure control means for temporarily dropping and then gradually increasing the hydraulic fluid pressure to the transmission and to the lockup clutch during each shift of the transmission, the control system comprising a delay valve responsive to the output pressure of the pressure control means for communicating the lockup clutch with a fluid drain when the output pressure of the pressure control means drops, and with the pressure control means when the output pressure thereof rises to a predetermined level, whereby the lockup clutch, if in engagement, becomes disengaged upon shifting of the transmission and reengaged with some delay after the engagement of a selected one of the shift clutches; the delay valve comprising a housing defining a bore and having an inlet port in communication with the pressure control means, an outlet port in communication with the lockup clutch, and a drain port in communication with the fluid drain, a control spool movable in the bore to place the outlet port in selective communication with the inlet port and with the drain port, resilient means urging the control spool toward a first position for placing the outlet port in communication with the drain port, and means defining a pressure chamber in communication with the inlet port for urging the control spool against the resilient means toward a second position for allowing communication between the inlet port and the outlet port when the output pressure of the pressure control means rises to the predetermined level.

4,448,294
CLUTCH RELEASE BEARING HAVING VIBRATION DAMPING MATERIAL

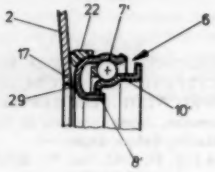
Manfred Brandenstein, Eussenheim; Lothar Walter, Schweinfurt; Armin Olschewski, Schweinfurt; Wolfgang Hüber, Schweinfurt, and Wolfgang Friedrich, Schweinfurt, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Mar. 27, 1981, Ser. No. 248,061

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1980, 3012019

Int. Cl.³ F16D *23/14*

U.S. Cl. 192—30 V **4 Claims**



1. In a clutch comprising a throw-out bearing having a bearing ring, said bearing being mounted for axial displacement by movement of an actuating member to move said bearing ring into and out of engagement with a clutch lever; said clutch lever having an end for contact with the bearing ring, the improvement comprising a ring of vibration damping material mounted on said bearing ring to vibration damp engagement between said clutch lever end and said bearing, said ring of vibration damping material being elastically deformable in the axial direction and projecting axially beyond the contact surface of said bearing ring adapted to engage said clutch lever only sufficiently far that it can be deformed by pressure of said actuating member to permit engagement between said surface and said clutch lever.

4,448,295
CONTROL APPARATUS FOR THE ELECTROMAGNETIC BRAKE OF A WEAVING MACHINE

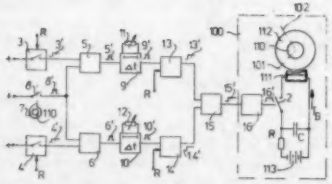
Gabriella F. Viniczay, Steinach, Switzerland, and Siegfried Roehrich, Götzis, Austria, assignors to Aktiengesellschaft Adolf Saurer, Arbon, Switzerland

Filed Aug. 13, 1981, Ser. No. 292,450

Claims priority, application Switzerland, Aug. 27, 1980, 6442/80

Int. Cl.³ F16D *71/00*; D03D *51/18*

U.S. Cl. 192—125 A **6 Claims**



1. A control apparatus for the electromagnetic brake of a weaving machine comprising:

at least one switching stage for generating a continuous signal representative of a braking function;

at least one switching stage for generating a pulse signal which is released periodically at a given angular position of a shaft of the machine;

and AND-gate;

said switching stage for the continuous signal and said switching stage for the pulse signal being commonly connected to said AND-gate which produces a stop pulse for a subsequently connected brake unit of the machine shaft;

a time-delay element connected in circuit after said AND-gate;

said time-delay element having means for regulating the time-delay between an output pulse of said AND-gate and an output pulse of said time-delay element; and

said regulatable time-delay being a measure for the angular position of the machine shaftat the moment of releasing said stop pulse for said brake unit and the moment of standstill of the machine.

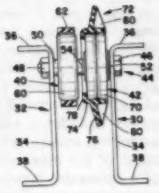
4,448,296
LIVE GUIDE SYSTEM FOR GRAVITY CONVEYORS

Charles P. Tabler, Hamilton, Ohio, assignor to Buckhorn Material Handling Group Inc., Cincinnati, Ohio

Filed Sep. 8, 1981, Ser. No. 300,181

Int. Cl.³ B65G *13/00*

U.S. Cl. 193—35 C **21 Claims**



1. A live guide and load speed control mechanism for a gravity type conveyor wherein a load is supported by and passed along a planar flowpath defined by said conveyor, said mechanism comprising:

a rail disposed longitudinally of said flowpath adjacent one side edge thereof and having an uppermost portion disposed beneath the plane of said flowpath; a plurality of cylindrical rollers each including an outer circumferential surface and being journalled to said rail at spaced intervals therealong for rotation about axes generally normal to the rail length, wherein at least some of said plurality of rollers are mounted such that at least a pair of commonly journalled rollers are disposed in an axially spaced apart relationship with each other; a first roller in each said pair including an annular load support ring of compressible material received on the roller outer circumferential surface and adapted to support a load; and, a second roller in each pair having a generally annular guide ring received on the roller outer circumferential surface, said guide ring including a body portion having a generally radially outward disposed load guiding flange extending circumferentially thereof adapted to guide a load moving along said flowpath and a thrust resisting means for retaining said guide ring on the associated second roller.

4,448,297
FERROMAGNETIC COIN VALIDATOR AND METHOD

Lewis I. Mendelsohn, King's Point, Valencia, 34B, c/o Toscher, Del Ray Beach, Fla. 33446

Filed Jun. 18, 1981, Ser. No. 275,115

Int. Cl.³ G07F *3/02*

U.S. Cl. 194—100 A **11 Claims**

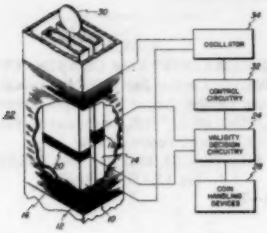
1. Apparatus for validating a coin or other object comprising:

a primary coil connected to an oscillator;

a first pickup coil within the windings of the primary coil and having the axis of its windings disposed substantially parallel with the axis of the primary coil;

a second pickup coil within the windings of the primary coil and having its windings disposed substantially parallel with the axis of the primary coil;

the configuration and turns of the second pickup coil being substantially the same as the first pickup coil so that the inductive properties of the two pickup coils are substantially the same,



means for holding a standard coin of known ferromagnetic properties within the first pickup coil so that the plane of the coin is substantially parallel with the axis of that coil;

means for passing a test coin through the second pickup coil so that the plane of the test coin is substantially parallel with the axis of that coil; and

means for sensing the combined output of the pickup coils as the test coin passes through the second pickup coil.

4,448,298

ROTARY TROUGH TYPE COOLING BED RUN-IN APPARATUS

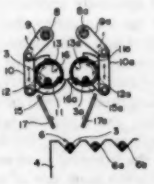
Giichi Matsuo, Tokyo, Japan, assignor to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 219,377, Dec. 22, 1980, abandoned. This application Jan. 10, 1983, Ser. No. 456,799

Claims priority, application Japan, Dec. 26, 1979, 54-168079

Int. Cl.³ B65G *47/26*

U.S. Cl. 198—451 **11 Claims**



1. In a rotary trough type cooling bed run-in apparatus employed for guiding a small round bar rolled by a merchant bar mill to the upper input side of a cooling bed and allowing the bar to drop in an aligned state on the cooling bed, the combination comprising:

a plurality of rotatably mounted long troughs open at each end and arranged in serial fashion, each having a longitudinal slit and each being adapted to receive a product bar axially;

a plurality of rotary guide means secured lengthwise to each of said long troughs each having a lateral opening extending in the same direction as said slit;

fixed support means for rotatably supporting each of said long troughs through said guide means;

a slit cover secured to said support means without interfering with the rotation of said long troughs and said guide means, whereby, in response to the rotation of each of said long troughs said slit is covered when said slit faces said slit covers and said slit is uncovered when said slit is not facing said slit covers; and

a cooling bed having a plurality of grooves disposed below said long troughs, whereby, the product bar dropped from each of said long troughs through said slit is received in one of said grooves.

4,448,299

APPARATUS FOR ADVANCING ELONGATE OBJECTS AROUND A CURVE

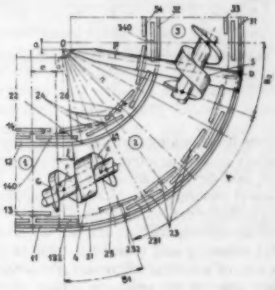
Hervé Voillot, Sartrouville, France, assignor to Creusot-Loire, Paris, France

Filed Oct. 15, 1981, Ser. No. 311,730

Claims priority, application France, Dec. 1, 1980, 80 25442

Int. Cl.³ B65G *47/26*

U.S. Cl. 198—457 **3 Claims**



1. Apparatus for advancing elongate objects (D) around a curve between an upstream straight guideway (1) and a downstream guideway (3) of different orientation, connected by curved connecting guideway (2), each of said straight guideways (1, 3) being constituted by two pairs of parallel guides (11, 12; 31, 32) between which said objects (D) are advanced by successive displacements by means of two series (13, 14; 33, 34) of overlapping seating plates fixed on shafts perpendicular to said guides and rotated in synchronism at a rate determining a constant linear rate of displacement of said objects, said curved connecting guideway (2) being bounded by two pairs of guides (21, 22) assuring continuity of guidance from said upstream guideway (1) to said downstream guideway (3) respectively at the inner side and the outer side at the curve therebetween, said inner guides (22) of said curved guideway (2) being associated with a series of angularly spaced seating plates (24) fixed on shafts normal to said curve, said plates (24) being driven in synchronism with said plates (14; 34) of said straight guideways (1, 3) at a rate determining a constant angular rate of change of orientation of said objects; said outer guides (21) being associated in the central part (A) of said curve, with a series of angularly spaced, overlapping seating plates (23) the axes of which are normal to said curve, said seating plates (23) being rotated in synchronism at a rate determining, along the outer guide (21), a tangential speed corresponding to the constant angular rate of change of orientation, and said outer guides (21) being associated, in the upstream (B1) and downstream (B2) parts of said curve, with two varying-speed drive devices (4, 5) determining along said outer guide 21 respectively in the upstream part (B1) a tangential speed increasing from the linear speed along said upstream guideway (1) to the tangential speed along said curved guideway (3) and in said downstream part (B2) a tangential speed decreasing from the tangential speed along said curved guideway (2) to the linear speed along said downstream guideway (3).

4,448,300
DEVICE FOR BLOCKING CONTAINERS AGAINST MOVING ON A CONVEYOR

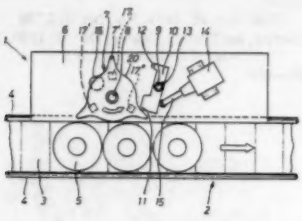
Gerhard Reich, Bernhardswald, and Michael Wenner, Neutraubling, both of Fed. Rep. of Germany, assignors to Krones Aktiengesellschaft Hermann Kronseder Maschinenfabrik, Neutraubling, Fed. Rep. of Germany

Filed Jan. 21, 1982, Ser. No. 341,399

Claims priority, application Fed. Rep. of Germany, Jan. 28, 1981, 3102669

Int. Cl.³ B65G *47/74*

U.S. Cl. 198—633 **8 Claims**



1. A device for blocking and unblocking movement of containers that are guided to move along a predetermined path on a conveyor, said device comprising:

a star wheel mounted for rotation adjacent said path and having radially extending arms,

means for selectively locking the star wheel against rotation and for releasing said wheel for rotation at two different times, one of which is when said star wheel is in a neutral position wherein the arms are outside of the path of container movement and the other of which is when said star wheel is in a blocking position wherein an arm extends into the path of container movement, and

means operative when said star wheel is unlocked at neutral position to initiate rotation of the star wheel at least through a sufficient angle for one of its arms to enter said path in the direction of container movement such that if there is a container moving into the one arm it will rotate said star wheel for being locked in blocking position.

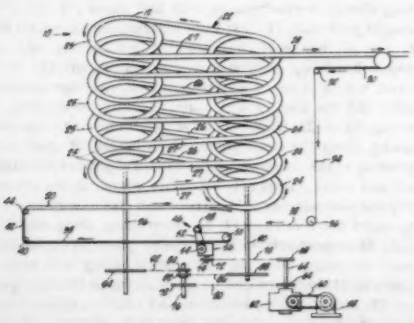
4,448,301
CONVEYOR SYSTEM WITH FRICTIONALLY DRIVEN CONVEYOR BELT

David W. Alger, One Oceanaire Dr., Rancho Palos Verdes, Calif. 90274

Filed Aug. 4, 1980, Ser. No. 175,313

Int. Cl.³ B65G *21/18*

U.S. Cl. 198—778 **46 Claims**



1. A conveyor system comprising:

(a) an endless flat belt capable of bending in an edgewise direction, the belt moving along a path comprising a plurality of vertically spaced apart loops, each loop comprising two curved portions interconnected by two straight portions, and

(b) means for applying a frictional driving force to the underside of the belt and carrying the belt along the curved portions of the paths, wherein the belt is driven substantially only by friction between the applying means and the underside of the belt.

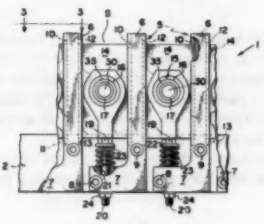
4,448,302
ROLLER CONVEYOR CONSTRUCTION

Richard A. Weaver, Linden; James H. Niedzielski, Fenton; John R. Herronen, Linden; Joseph M. Wright, Fenton, and Ronald M. Prime, Flint, all of Mich., assignors to Prime & Weaver Investment Company, Fenton, Mich.

Filed Nov. 23, 1981, Ser. No. 324,142

Int. Cl.³ B65G *13/06*

U.S. Cl. 198—781 **11 Claims**



1. Roller conveyor apparatus comprising a main frame; a first plurality of independent, uniformly spaced apart support members individually fixed to and upstanding from said frame and extending along one side thereof; a second plurality of independent, uniformly spaced apart support members individually fixed to and upstanding from said frame and extending along its opposite side parallel to and spaced from said first plurality of support members, the space between each adjacent pair of said support members on the same side of said frame being uniform and upwardly unobstructed; a plurality of rollers each of which has a mounting shaft projecting beyond its opposite ends, each of said rollers being of such length as to be accommodated between any selected pair of said first and second pluralities of support members on opposite sides of said frame; journal means fitted to each of said shafts outboard of the associated roller; and a journal support for each of said journals, each of said journal supports having a uniform width enabling it to span the space between any adjacent two of said support members on the same side of said frame, each of said journal supports being mounted on and between each of two adjacent support members on the same side of said frame for linear sliding movements in a vertical plane only.

4,448,303
POINT OF SALE DISPLAY CONTAINER

Ronald Beckenfeld, 1535 Carla Ridge, Beverly Hills, Calif. 90210

Filed Mar. 24, 1983, Ser. No. 478,571

Int. Cl.³ B65D *5/44*

U.S. Cl. 206—44 R **7 Claims**

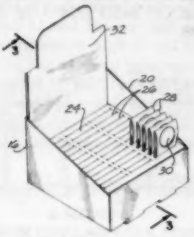
1. A container for point of sale display and retention of articles comprising:

a recti-linear box having a bottom, front, rear and two sidewalls;

an insert comprising a flat body having four orthogonally disposed flaps extending therefrom with a fold line at the intersection between each flap and said body, said flaps being foldable for insertion into said box with the flaps

having engagement with said bottom wall thereof to support said body for defining a planar surface supported above said bottom wall at a level substantially the same as the height of said front wall, said planar surface being substantially co-extensive with said bottom wall and defining a plenum therewith;

said planar surface having a plurality of individual slits defined by cutting through said planar surface without removing material from said body; and



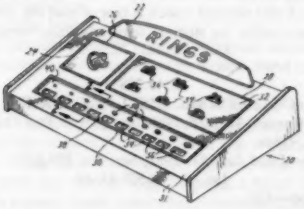
a plurality of flat elongate pocket defining means having a flat tongue extending therefrom, one of said slits cooperatively receiving one of said tongues thereby allowing said tongue to enter said plenum, said pocket being supported above said surface for retaining said article therein, said pocket being open along at least one side thereof to permit articles to be readily inserted into and removed from said pocket, said pocket being formed by a pair of opposed flat walls, one of said walls defining an opening therethrough to provide visibility of an article received in said pocket.

4,448,304

REMOUNT KIT FOR REPRESENTATIONS OF STONE-BEARING RINGS

Michael Weinzettel, St. Louis, Mo., and Walter Weeks, Collinsville, Ill., assignors to Eisenstadt Company, St. Louis, Mo.

Filed Mar. 29, 1982, Ser. No. 362,600
Int. Cl.³ B65D 71/00
U.S. Cl. 206—223 **15 Claims**



1. A remount kit for stone-bearing rings which comprises a plurality of individually-different, displayable, demonstration rings, each of which is formed and dimensioned to represent an ultimate ring to which at least one ultimate stone can be secured, and a plurality of individually-different, stud-mounted, displayable, demonstration stones, each of which is formed and dimensioned to represent an ultimate stone which could be secured to at least one of the ultimate rings represented by said plurality of individually-different, displayable, demonstration rings, the studs of said individually-different, stud-mounted, displayable, demonstration stones being dimensioned to project substantial distances inwardly of the finger-engaging surface of a selected, displayable, demonstration ring of said plurality of individually-different, displayable demonstration rings, said studs thereby providing means by which they may be easily held for temporary displaying of one or more selected, stud-mounted, displayable, demonstration stone or stones immediately adjacent said selected, displayable, demonstration ring, whenever said one or more selected, stud-mounted, displayable, demonstration stone or stones is or are disposed in juxtaposition to said selected, displayable, demonstration ring to enable a viewer to visualize the position or positions which the ultimate stone or stones, represented by said one or more selected, stud-mounted, displayable, demonstration stone or stones, would occupy when secured to the ultimate ring corresponding to said selected, displayable, demonstration ring and also to enable the viewer to visualize the appearance of said ultimate ring and ultimate stone or stones in any desired attitude or position of said ultimate ring by enabling said selected, displayable, demonstration ring to be moved to any corresponding attitude or position while having said one or more selected, stud-mounted, displayable, demonstration stone or stones temporarily associated with it.

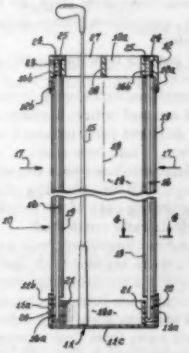
4. A remount kit as claimed in claim 1 wherein a display-like support has a plurality of spaced recesses that releasably hold the shanks of said plurality of individually-different, displayable, demonstration rings, wherein said support has a plurality of small diameter openings that releasably hold said plurality of individually-different, stud-mounted, displayable, demonstration stones, wherein said support holds identifying indicia adjacent said plurality of individually-different, stud-mounted, displayable, demonstration stones, and wherein two-dimensional representations of selected rings of said plurality of individually-different, displayable, demonstration rings have a space therein which can have the locations and natures of stones recorded thereon to facilitate the subsequent proper positioning of one or more of said ultimate stones on said ultimate ring.

4,448,305

GOLF BAG INCLUDING STIFFENING STRUCTURE

Kim Y. Sup, Busan, Rep. of Korea, assignor to King Stone Co., Ltd., Busan, Rep. of Korea

Filed Aug. 30, 1982, Ser. No. 413,221
Int. Cl.³ A63B 55/00
U.S. Cl. 206—315.8 **5 Claims**



1. A lightweight reinforced golf bag construction, comprising

(a) a longitudinally elongated golf bag having an open upper end, a closed lower end, and a flexible wall extending between said ends and about a hollow interior adapted to receive golf club shafts,

(b) multiple rods extending longitudinally between said ends and removably retained by the bag adjacent said wall to resist sideward flexing of the wall,

(c) a channel at the closed lower end of the bag and opening longitudinally toward the upper end of the bag, the rod

lower ends freely, loosely and blindly received in said channel, and

(d) holders removably holding the upper ends of the rods to the bag adjacent the upper end thereof and thereby holding the rod lower ends in said channel, the holders having screw threaded attachment to the rods,

(e) said channel being annular and defined by a relatively rigid cap attached to said flexible wall, said cap having an annular upstanding wall directly exposed to the rod lower ends and spaced radially inwardly therefrom, the radial dimension of the channel at the rod locations being greater than the outer diameters of the rod lower ends.

4,448,306

INTEGRATED CIRCUIT CHIP CARRIER

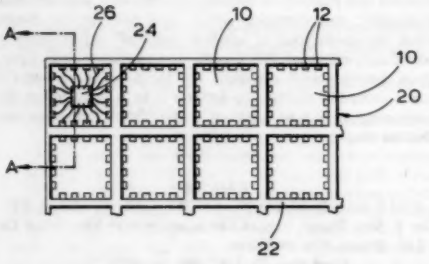
F. Nihal Sinnadurai, Woodbridge; Anthony J. Cook, Dippenhall, Near Farnham, and Keith W. Gurnett, Bracknell, all of England, assignors to British Telecommunications, London, England

Filed Jan. 25, 1982, Ser. No. 342,358

Claims priority, application United Kingdom, Feb. 9, 1981, 8103840

Int. Cl.³ B65D *73/02, 85/42*

U.S. Cl. 206—331 **8 Claims**



1. A structure for mechanically mounting integrated circuit dice within respective protective cavities and for also providing electrical connections from each die within its cavity to external electrical connection points outside its cavity, said structure comprising:

a base sheet of plastics material having a top surface and a bottom surface;

a plurality of metallized holes being formed in said base sheet between said top and bottom surfaces and disposed about respectively different predetermined contiguous areas on said top surface of said base sheet;

a plurality of first metallized pads disposed on said top surface in register with said plurality of holes, with respectively corresponding ones of the metallized holes and first pads being electrically connected;

a plurality of second metallized pads disposed on said bottom surface also in register with said plurality of holes, with respectively corresponding ones of the metallized holes and second pads being electrically connected;

at least some of said first pads being individually extended in two directions away from their corresponding holes so as to have opposite ends terminating within different but contiguous ones of said predetermined areas; and

a grid sheet of plastics material bonded to said top surface of the base sheet, said grid sheet having plural open apertures formed by interconnected arms which are in alignment with said holes and covering portions of said first pads, said apertures being in register with said predetermined areas such that said arms define the sidewalls of said protective cavities;

said structure thereby providing plural integrated circuit carriers when cut apart along lines defined by said holes, each carrier having its own protective cavity defined by a corresponding one of said apertures and also having an array of generally U-shaped conductive leads formed by respective portions of said metallized holes and pads connecting the top surface of the carrier from points within the protective cavity to the bottom surface of the carrier outside that cavity.

4,448,307

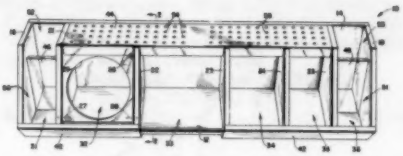
DENTAL SUPPLY DISPENSER

Clyde L. Roggenkamp, 1152 N. White River Pkwy. #512, Indianapolis, Ind. 46222

Filed Jun. 9, 1982, Ser. No. 386,449

Int. Cl.³ B65D *1/24, 1/36, 85/20*

U.S. Cl. 206—369 **12 Claims**



1. A dental supply dispenser and instrument holder apparatus comprising: a planar elongated base member having front and rear side walls, end walls and transverse partition walls extending upwardly therefrom, said partition walls extending transversely to the longitudinal axis of said base member and being generally parallel to said end walls; said front side wall extending outwardly toward the front from the base at an angle relative to the vertical; said rear side wall extending higher than said front side wall, said end walls and partition walls having parallel front edges which abut said outwardly extending front wall and extend upwardly and inwardly from the top of said front wall, said front and rear side walls, together with said end walls and partition walls, defining a plurality of compartments which are open at the upper front portion thereof, at least one of said compartments having a door with hinge means pivotally connecting said door to said apparatus; a planar top wall attached to the upper portions of said partition walls and extending generally horizontally to enclose the top of at least one of said compartments, said top wall having a plurality of openings in the upper surface thereof for receiving dental burs, said apparatus including a compartment at each end thereof which is free of said top wall so as to be easily accessible for storing items of greater length.

4,448,308

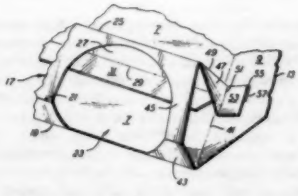
COLLAPSIBLE DISPLAY CARRIER

Robert G. Carver, Ashland, Ohio, assignor to Don Coburn, Inc., Ashland, Ohio

Filed Jun. 21, 1982, Ser. No. 390,627

Int. Cl.³ B65D *85/44*

U.S. Cl. 206—426 **14 Claims**



1. A collapsible display carrier for articles inserted into the carrier, said carrier comprising;

opposing top and bottom walls having transverse and lateral edges;

opposing side walls laterally hingedly attached to said lateral edges of said top and bottom walls to form a sleeve said

side walls including lateral fold lines defining upper and lower half side walls and acting as lateral hinge axes for collapsing said carrier to a substantially flat configuration about a lateral plane lying intermediate of said top and bottom walls; and

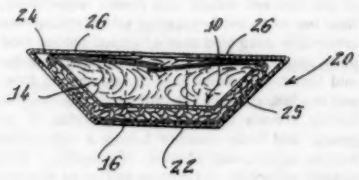
collapsible retaining means for engaging articles inserted into said carrier, said collapsible retaining means comprising a divider wall hingedly secured to said bottom wall along a first transverse hinge axis and extending between said opposed lower half side walls, a support wall hingedly attached to said divider wall and extending from said support wall to said bottom wall and hingedly attached to a first transverse edge of said bottom wall, said support wall including a second transverse hinge axis, and hinge means depending from said divider wall and fastened to one of said lower half side walls for collapsing said retaining means to a substantially flat configuration when said carrier is collapsed to a substantially flat configuration.

4,448,309

CONTAINER FOR EXPANDABLE FOOD POUCH

Harry I. Roccaforte, Western Springs, and Raymond G. Scott, Oak Brook, both of Ill., assignors to Champion International Corporation, Stamford, Conn.

Filed Sep. 23, 1982, Ser. No. 422,472
Int. Cl.³ B65D *5/36*
U.S. Cl. 206—525 **22 Claims**



1. A quick-opening, non-metallic container for housing an expandable food pouch in a non-expanded and in an expanded condition comprising:

a base portion having

a bottom support panel of regular polygonal shape bisected by a scoreline and adapted to be folded about said scoreline,

upwardly and outwardly extending side wall panels connected to preselected ones of the edges of said polygonally shaped bottom support panel, each one of said side wall panels being connected to the adjacent one thereof to form with said bottom support panel a bowl when said bottom support panel is unfolded about said scoreline, said bowl being adapted to receive an expandable food pouch in a stored condition,

a plurality of overlapped, separate top panels, each top panel having an edge resiliently and foldably connected to one of said side panels, and

means connected to said bottom support panel extending between said bottom support panel and said side wall panels for locking said bottom support panel in a substantially horizontal plane relative to said sidewalls,

said locking means including

a pair of abutment tabs foldably connected to opposed sides of said bottom support panel adapted to be placed in contact with the interior of a pair of adjacent sidewall panels, and

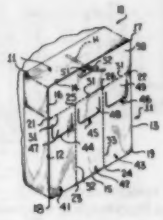
a V-shaped locking tab cut from at least one of said pair of abutment tabs extending at least partially beneath one of said sidewall panels.

4,448,310

DISPLAY PACKAGE OF PAGE-MARKERS

Dale A. Hodgson, Summersville, W. Va., assignor to Bright of America, Summersville, W. Va.

Filed Feb. 7, 1983, Ser. No. 464,413
Int. Cl.³ B65D *85/62, 83/00*
U.S. Cl. 206—526 **3 Claims**



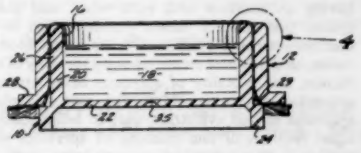
1. A package for the display, sale and eventual use of page-markers consisting solely of a single sheet of paperstock material of a generally polygonal configuration defined by a pair of generally parallel spaced side edges and generally parallel spaced top and bottom edges, at least two lines of weakening disposed generally normal to each other, a first of said lines of weakening being spaced below and in parallel relationship to said top edge, a second of said liens of weakening being spaced inboard of and parallel to said side edges and extending between said first line of weakening and said bottom edge and defining therewith at least a pair of page-markers joined to each other along said second line of weakening, each said pair of page-markers having a generally U-shaped cut line opening upwardly toward said first weakening line defining a page-engaging tab, and cut-line means between said top edge and said first weakening line and generally centrally of said spaced side edges forming an opening for suspending said package for display purposes.

4,448,311

SAMPLE CELL

Edwin A. Houser, Fullerton, Calif., assignor to Tech Ref, Inc., Fullerton, Calif.

Filed Jan. 24, 1983, Ser. No. 460,310
Int. Cl.³ G01N *21/00*
U.S. Cl. 206—527 **8 Claims**



1. A sample cell for use with a radiation permeable membrane, in analyzing a liquid sample, said sample cell comprising:

A cup member having upstanding side walls and a bottom wall;

a ring member telescopically slideably received by the exterior of the side walls of said cup with the intermediate portion of said membrane sandwiched therebetween so as to be tightly stretched across the top of said side walls;

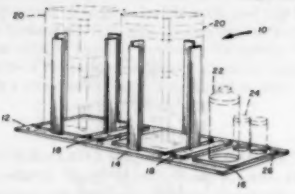
complementary releasable rib and recess means interposed between said members; and

said cup and ring being molded from a synthetic plastic mixed with a lubricant.

4,448,312
VERTICAL FOOD HOLDER

Eldor N. Schuman, 9633 10th Ave., Carney, Md. 21234

Filed Mar. 18, 1982, Ser. No. 359,507
Int. Cl.³ A47F 7/00
U.S. Cl. 211—49 R 5 Claims



1. A food holding system, comprising:

at least one of a first food holding unit, said first food holding unit having a first base means, a first food support means, and a plurality of first retainer means, said first base means being substantially square in configuration and having a thickness and a top face side and a bottom face side, said bottom face side being for the purpose of providing an interface with any surface upon which said first food holding unit is placed, said first food support means being substantially square in configuration, but of lesser outside dimensions in each direction than said substantially square first base means, said first food holding unit having a thickness and a top face side and a bottom face side, said first food support means being centrally located on and suitably affixed to said first base means, said bottom face side of said first food holding unit interfacing with said top face side of said first base means, the four edges of said substantially square first food holding unit being substantially parallel with the respective four edges of said substantially square first base means on which it is centrally located and to which it is suitably affixed, said plurality of first retainer means being peripherally located and spaced around said first food support means and suitably affixed to said top face side of said first base means and individually to one of said four edges of said substantially square first food holding unit, each of said first retainer means of said plurality of first retainer means being further centrally positioned along the peripheral outside edge of one of said four edges of said substantially square first food holding unit, each of said first retainer means being substantially rectangular in cross sectional configuration, said plurality of first retainer means extending vertically upward from said first base means, said plurality of first retainer means having no interface with each other, said plurality of spaced first retainer means retaining food in position therebetween and positioned on said first food support means, said first base means having a plurality of apertures therein, said plurality of apertures being arranged in a symetrical pattern on said top face side, said plurality of apertures in said symetrical pattern being spaced apart, equal portions of said plurality of apertures with each portion in like symetrical patterns being each centrally positioned along and spaced from one of said four edges of said substantially square first base means;

at least one of a second food holding unit, said second food holding unit having a second base means, and a plurality of second retainer means, said second base means being substantially rectangular in configuration and having a thickness and a top face side and a bottom face side, said bottom face side being for the purpose of providing an interface with any surface upon which said second food holding unit is placed, said plurality of second retainer means being of a depressed area configuration for each retainer means of said plurality of second retainer means, said plurality of second retainer means being formed as a plurality of said depressed area configurations set into a substantially rectangular member, said substantially rectangular member with said plurality of depressed areas therein having a longer side thereof being centrally positioned along a dimensionally longer edge of said second base means, said longer side of said substantially rectangular member coinciding with said dimentionally longer edge of said second base means, the dimensionally shorter side of said substantially rectangular member being dimensionally less than the dimensionally shorter edge of said substantially rectangular second base means, said plurality of depressed areas being circular in configuration, said substantially rectangular member being suitably affixed to said top face side of said second base means as located and positioned, said second retainer means having said plurality of depressed areas therein holding food in a plurality of containers, said plurality of containers of food being retained within and by said plurality of depressed area and held in a vertical position thereby, said second base means having a plurality of apertures therein, said plurality of apertures being arranged in a symetrical pattern and spaced apart similar to one of said portions of said plurality of apertures in said first base means, said plurality of apertures in said second base means being centrally positioned along and spaced from the dimensionally longer edge of said second base means opposite to said longer side coinciding with said longer side of said substantially rectangular member, said symetrical pattern and spacing of apertures in said second base means from said longer edge matching similar said symetrical pattern and spacing of said apertures in said first base means, said pattern of apertures in first and second base means respectively, being directly opposite to each other at the adjacent edges of said first and second base means, respectively; and

at least one of a coupling means, said coupling means being removably assembled to said first and second food holding units, respectively, said coupling means thereby affixing said first food holding unit to said second food holding unit in a lateral relation to each other, said coupling means having a body member and a plurality of projection means, said body member having a top surface and a bottom surface, said plurality of projection means being suitably affixed to said bottom surface of said body member, said plurality of projection means being spaced in a symmetrical pattern on said bottom surface of said body member, said symmetrical pattern matching said symmetrical pattern of apertures in adjacent first and second base means when assembled adjacent to each other, said symmetrical patterns of said apertures and said projection means providing for assembly of said first food holding unit to said second food holding unit by removably inserting said symmetrical pattern of projection means into said symmetrical pattern of apertures in said adjacent first and second base means to removably affix said first food holding unit to said second food hold unit.

4,448,313
SUPPORTING DEVICE

Glenn A. Pomeroy, #1 Revere La., and Carol L. Scrivens, 321 S. Logan St., both of Elyria, Ohio 44035

Filed Jul. 19, 1982, Ser. No. 399,728
Int. Cl.³ A47G 29/00
U.S. Cl. 211—71 1 Claim

1. A supporting device, including:

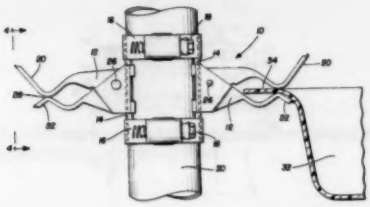
a pair of circular adjustable mounting clamps;

a pair of support members integrally attached to said mounting clamps, said support members, each being perpendicular to said mounting clamps;

a non-pivotal first lip member, rigidly affixed to each said support member, said first lip member being arcuate in configuration at one end and terminating in a triangular flare at the other end;

a bearing member affixed to said first lip member at the end terminating in a generally triangular flare,

a second lip member, pivotally attached to said first lip member by said bearing member such that said second lip member is superimposed on said first lip member and is rotatable about said bearing member, said second lip member being arcuate in configuration at one end thereof; and spring means attached to said bearing member for resiliently



biasing said second member against said first lip member, said first and second lip member being in pressurized contact with one another at opposed points defined by said arcuate ends and being adapted for resiliently gripping a pan at the edge thereof, with said first lip member contacting one surface of said pan and said second lip member contacting another surface of said pan.

4,448,314

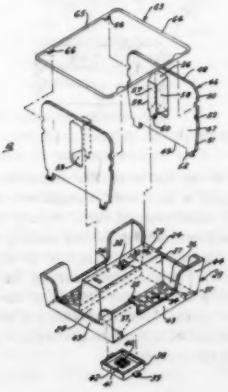
MERCHANDISE RACK

Peter J. Weiller, Armonk, N.Y., assignor to Thomson Leeds Company, Inc., New York, N.Y.

Filed Jun. 14, 1982, Ser. No. 388,458

Int. Cl.³ A47F *5/02*

U.S. Cl. 211—131 **14 Claims**



1. A display structure comprising a vertical shaft;

A rack member including a body member having a first coupling opening engaging said shaft, a pair of opposite upstanding partition walls coupled to said body member and a frame member including a first pair of opposite legs extending between and beyond and engaging the opposite edges of said walls and a second pair of opposite legs disposed outwardly of said walls; and

means for supporting said rack member at a predetermined position along said shaft.

4,448,315

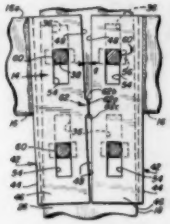
STORAGE RACKS WITH SPACER TABS

James H. Obermeyer, Crown Point, Ind., assignor to Unarco Industries, Inc., Chicago, Ill.

Filed Nov. 13, 1981, Ser. No. 321,045

Int. Cl.³ A47F *5/00*

U.S. Cl. 211—191 **3 Claims**



1. A storage rack which comprises:

a generally upright post having a pair of end surfaces facing in opposite directions along the longitudinal axis of the storage rack, and an outer surface extending between and connecting said end surfaces;

a first beam assembly having a first elongated, generally horizontal beam extending in one direction along said longitudinal axis, a first connector assembly fixedly secured to one end of said first beam for connecting said first beam to said post, and a first tolerance control tab fixedly secured to said first connector assembly at a location generally adjacent said outer surface of said post; and

a second beam assembly having a second elongated generally horizontal beam extending in the direction opposite to said one direction along said longitudinal axis, a second connector assembly fixedly secured by second connector means to one end of said second beam for connecting said second beam to said post, and a second tolerance control tab fixedly secured to said second connector assembly at a location generally adjacent said outer surface of said post,

said first and second connector assemblies being spaced from each other and said first and second tolerance control tabs being positioned adjacent each other at generally the same vertical level, some degree of play being provided between said first and second connector assemblies and their associated upright post when said connector assemblies are seated generally in their installed positions but are not yet fully tightened,

said first and second tolerance control tabs abuttingly engaging each other when said connector assemblies are tightened in their final installed positions.

4,448,316

STRAW-EQUIPPED LIQUID DRINK CONTAINER

Nakayama Hiroshige, 2-2-9, Asakusabashi, Taito-ku, Tokyo, Japan

Filed Jul. 17, 1981, Ser. No. 284,404

Claims priority, application Japan, Jul. 28, 1980, 55-106755[U]; Jun. 15, 1981, 56-87769[U]

Int. Cl.³ A47G *21/18;* **B65D** *55/16, 47/04*

U.S. Cl. 215—1 A **3 Claims**

1. A straw-equipped liquid drink container comprising, a liquid container having a mouth, a semispherical cap screwed over said mouth of said container, a tubular projecting opening on the upper side wall surface of said cap, a straw made of flexible material disposed in said container and protruding in use through said opening, a seal cap, means for removably screwing said seal cap onto said tubular projecting opening comprising a tubular extension on said seal cap to fit over said tubular projecting opening, a pair of internal screw thread segments provided on the opposite sides of the internal periph-

ery of said tubular extension of said seal cap, a pair of external screw thread segments provided on the external periphery of said tubular projecting opening, and gaps provided between said pairs of thread segments for enabling said segments to pass therethrough when said seal cap is placed in the closing position, said seal cap forcing the protruding part of said straw into said liquid container and retaining it therein when said seal cap

is in the closed position, a support member connecting said seal cap to said projecting tubular opening, a snap ring inserted onto said straw, and a coil spring fixedly attached at one end to said snap ring and at the other end to said tubular opening so that said straw is resiliently urged by said spring into the protruding position to project out of said tubular opening by flexure of said straw as well as the spring action of said spring when said seal cap is opened.

4,448,317

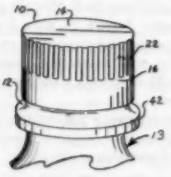
TAMPER EVIDENT CLOSURES AND PACKAGES

Mortimer S. Thompson, Arlington, Mass., assignor to Tri-Tech Systems International, Inc., West Springfield, Mass.

Filed Feb. 18, 1983, Ser. No. 467,791

Int. Cl.³ B65D *55/02*

U.S. Cl. 215—203 **53 Claims**



1. A tamper evident resealable closure for closing, opening and reclosing a package, including a stretchable portion thereof which effects a change in color when stretched, and mechanical means thereon adapted to coact with the package to stretch said portion to effect a change in color which indicates the condition of the package.

4,448,318

TAMPER EVIDENT CONTAINER-CLOSURE ASSEMBLY

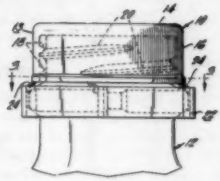
Allen D. Lowe, Montgomery, Pa., assignor to The West Company, Phoenixville, Pa.

Filed Aug. 20, 1982, Ser. No. 410,047

Int. Cl.³ B65D *41/34*

U.S. Cl. 215—252 **4 Claims**

1. A closure for containers having a discharge opening and a finish with means for supporting the closure over the discharge opening comprising a cap portion of generally cup-like form having a top and a depending skirt with means on the interior peripheral surface thereof cooperating with means on the container finish for applying and removing the cap portion; a tamper-evident ring connected to the lower terminal edge of said skirt by at least two fracturable bridge means and at least one lug cooperatively associated with at least one cam element below the container finish operable in one direction of move-



ment of the cap portion relative to the container to effect fracturing of the bridge means to separate the tamper-evident ring from the cap portion, said bridge means being oriented in a predetermined manner relative to one another to effect sequential breaking of said bridge means in a given pattern upon relative movement of said cap portion and ring in said one direction.

4,448,319

SCREW CAP

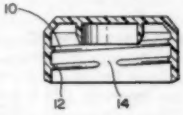
Josef Kern, Hainburg, Fed. Rep. of Germany, assignor to Firma Heinrich Josef Winter, Hainburg/Main, Fed. Rep. of Germany

Filed Apr. 23, 1982, Ser. No. 371,496

Claims priority, application Fed. Rep. of Germany, Feb. 6, 1982, 3204201

Int. Cl.³ B65D *41/04*

U.S. Cl. 215—329 **11 Claims**



1. A plastic screw cap for bottle-like containers of the type having at their mouth a neck with a single external screwthread making a full uninterrupted turn, the cap comprising a mating single screwthread within the cap making at least a full turn, and wherein the screwthread has only an interruption in the screwthread of the cap at a position along the screwthread at an angular spacing of less than 360° from the start of the screwthread of the cap for enabling snapping of the lowermost turn of the screwthread of the cap over the uppermost turn of the screwthread of the container.

4,448,320

CLOSURE WITH PLASTISOL LINER DEFINING A RETAINING BEAD

William J. Kapolas, Mt. Prospect, Ill., assignor to Continental White Cap, Inc., Northbrook, Ill.

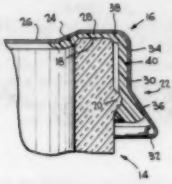
Filed Feb. 1, 1983, Ser. No. 462,846

Int. Cl.³ B65D *53/00*

U.S. Cl. 215—346 **11 Claims**

1. A closure comprising a shell having a cured plastisol liner

wherein the plastisol is in a puffed state, said liner having a lower radially inwardly directed locking bead formed solely



due to the puffed state of said plastisol for locking engagement beneath a container neck finish bead.

4,448,321

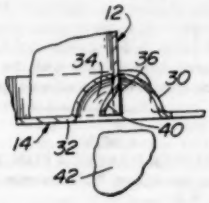
FASTENING SYSTEM

Jacques M. Hanlet, Loxahatchee, Fla., assignor to Intent Patent A.G., Liechtenstein

Filed Sep. 22, 1982, Ser. No. 421,278

Int. Cl.³ B29C *27/00*; B32B *7/08, 7/12*; B65D *6/32*

U.S. Cl. 220—4 R **2 Claims**



1. A closed container comprising:

(a) an open container member having an upper wall member and a sidewall member secured each to the other;

(b) a cover member having a dome member formed thereon defining an open chamber, said dome member having a slot formed therethrough for insert therethrough of at least a portion of said sidewall member into said dome open chamber, said portion of said sidewall member within said open chamber being deformed to fasten said cover member to said open container member; and,

(c) adhesive securement means inserted within said open chamber for sealing said sidewall portion and said cover member together.

2. A method for forming a closed container including the steps of:

(a) providing an open container having an upper wall member and a sidewall member secured each to the other;

(b) forming a dome member defining an open chamber in a cover member for said open container;

(c) cutting a slot in said dome member for insert of a portion of said sidewall member into said open chamber;

(d) deforming said portion of said sidewall member internal said open chamber for fastening said cover member to said open container; and,

(e) inserting adhesive within said open chamber to seal said sidewall member portion to said cover member.

4,448,322

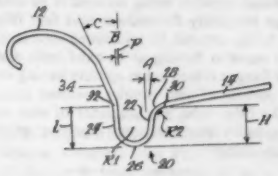
METAL CONTAINER END

John L. Kraska, Riverside, Ill., assignor to National Can Corporation, Chicago, Ill.

Division of Ser. No. 968,099, Dec. 8, 1978, Pat. No. 4,217,843, which is a continuation-in-part of Ser. No. 820,237, Jul. 29, 1977, abandoned. This application Oct. 11, 1979, Ser. No. 83,870

Int. Cl.³ B65D *8/08*

U.S. Cl. 220—67 **5 Claims**



1. A circular, metal container end having a metal thickness of approximately 0.0120 inches and including a peripheral curl and a central panel with a countersink between said curl and central panel extending below said central panel, the improvement of said countersink having inner and outer flat walls interconnected by a first arcuate portion, said first arcuate portion having a radius less than three times the thickness of said metal, said flat inner wall being integral with said central panel through a second arcuate portion having a radius approximately twice the thickness of said metal and said outer flat wall having a length greater than said inner flat wall so that an upper end is located above a peripheral edge of said central panel, and said outer flat wall defining an angle of less than five degrees with respect to a plane extending perpendicular to said central panel, said peripheral curl extending above said central panel so that said container end is capable of resisting at least 90 psi buckle pressure and at least 60 psi rock pressure.

4,448,323

SAFETY FUEL FILLER STRUCTURE OF A MOTOR VEHICLE

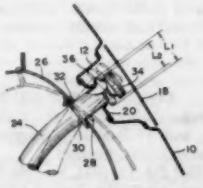
Isao Hayashi, and Makoto Moriya, both of Yokohama, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Mar. 5, 1982, Ser. No. 355,211

Claims priority, application Japan, Mar. 12, 1981, 56-34508; Mar. 12, 1981, 56-34509

Int. Cl.³ B65D *41/00*

U.S. Cl. 220—86 R **6 Claims**



1. A fuel filler structure of a motor vehicle having an outer body panel and an inner structural panel spaced from said outer body panel, said fuel filler structure comprising:

a cup-shaped base member secured to an open portion of said outer body panel to form a recess on said outer body panel, said base member being formed at its bottom portion with an opening;

a fuel filler tube secured to said inner structural panel with its fuel inlet mouth portion freely inserted into said recess through said opening of said base member;

a flexible sealing member sealingly covering the clearance defined between said filler tube and said base member;

a filler cap removably fitted to the mouth of said filler tube and located within said recess of said outer body panel; and

a bumper means mounted on said filler tube and constructed to make an initial collision with said base member when said fuel filler tube is displaced to a certain degree relative to said base member,

wherein said bumper means comprises a tubular member which is spacedly and coaxially mounted about the fuel filler tube in the vicinity of the mouth of said filler tube, said tubular member being secured at its axial one end to a flange integrally formed on said fuel filler tube, said flange being secured to said inner structural panel, said tubular member having at its axial both ends respective inward flanges which act as spacers having the cylindrical major portion of said tubular member coaxially spaced from the filler tube, the diameter of said major portion being greater than the outer diameter of the filler cap which is circular.

4,448,324

CONTAINER CLOSURE HAVING WEAKER OPENING MEANS

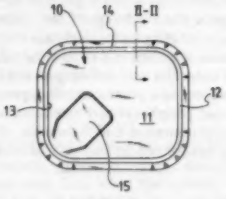
Jan B. Jeppsson, Lomma, and Zoltan Pollak, Lund, both of Sweden, assignors to AB Akerlund & Rausing, Sweden

Filed May 3, 1983, Ser. No. 491,020

Claims priority, application Sweden, May 10, 1982, 8202917-4

Int. Cl.³ B65D *17/34, 17/40*

U.S. Cl. 220—266 **22 Claims**



1. A container element comprising first and second injection molded portions and a tear line therebetween, said tear line comprising a weld zone comprising the area of direct contact between said first and second injection molded portions, said first injection molded portion including first and second elongated surfaces corresponding to the molds within which said first injection molded portion was formed, and said second injected molded portion including first and second surfaces corresponding to the molds within which said second injection molded portion was formed, whereby said weld zone comprises the area of direct contact between said first injection molded portion and said second injection molded portion.

4,448,325

CONTAINER CLOSURE

Cyril K. Edwards, Oadby, and Edward H. Webb, Dunchurch, near Rugby, both of England, assignors to Thomas Hunter Limited, Warwickshire, England

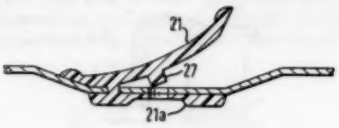
Filed Jul. 12, 1982, Ser. No. 397,070

Claims priority, application United Kingdom, Jul. 10, 1981, 8121325

Int. Cl.³ B65D *17/34*

U.S. Cl. 220—269 **9 Claims**

1. A closure for a container including an element which can be manipulated to expose an aperture in the closure and thereby allow pressure in the headspace to adjust to ambient pressure, the element including an upper member on the upper surface of the closure and a lower member adhered to the underside of the closure thereby sealing the aperture and protecting it from chemical attack from the contents of the container, said lower member being connected to the upper member through the aperture and having its shear strength varied so that a section thereof will shear easily to release the pressure in the headspace whilst another section has higher resistance to



shear and will retain the upper member on the closure after the upper member has been manipulated to release the pressure.

4,448,326

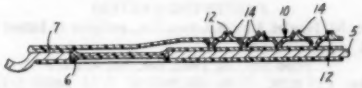
EASY OPENING TAPE CLOSURE FOR BEVERAGE CONTAINER

Wilfred R. Brochman, Oakdale, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 1, 1982, Ser. No. 438,304

Int. Cl.³ B65D *17/34*

U.S. Cl. 220—270 **9 Claims**



1. An easy opening closure for a container comprising a polymeric film having a free end portion to be grasped by the user, said free end portion having an array of punctures formed therein with each puncture being surrounded by a plurality of projections fractured from the tape with the projections projecting in opposite directions from adjacent punctures.

4,448,327

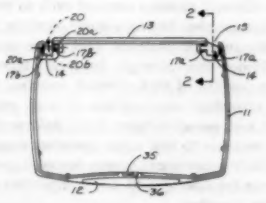
PLASTIC CONTAINER HAVING A CONCEALED HINGE

William J. Gahm, Jamesburg, N.J., assignor to Graber-Rogg, Inc., Cranford, N.J.

Filed Aug. 2, 1982, Ser. No. 404,453

Int. Cl.³ B65D *43/14, 51/04*

U.S. Cl. 220—341 **7 Claims**



1. A plastic container which comprises a first body, a second body for uniting with said first body to form an enclosure, when located within opposing relationship, and a pivotal pin having a body portion and end portion;

said first body having at least one pair of shoulders moulded therein in opposing relationship to each other, said pair of shoulders each having an opening therein for receiving and holding the respective end portions of said pin which is capable of being snap-fitted therein; and,

said second body having at least one moulded projection having an opening therein for receiving and holding the body portion of said pin when the first body is united with

the second body, thereby rendering any portion of the pin invisible external the container.

4,448,328

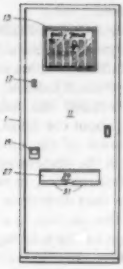
MACHINE FOR VENDING ARTICLES SUCH AS NEWSPAPERS, MAGAZINES AND THE LIKE

W. Jack Wingate, Charlotte, N.C., assignor to Hennessy Products, Incorporated, Chambersburg, Pa.

Filed Jan. 27, 1982, Ser. No. 343,157

Int. Cl.³ G07F *11/28*

U.S. Cl. 221—13 **11 Claims**



1. A vending machine for flat articles such as newspapers comprising an enclosed cabinet having an inclined ramp therein defining the bottom wall of an article storage magazine, an inclined outlet chute substantially aligned with said ramp and having a discharge opening communicating with the exterior of said cabinet, an upright vertically movable post adjacent the lower end of said ramp, electromechanical power means for lowering said post to release individual articles from said ramp and permit them to slide onto said outlet chute, coin actuated means for energizing said power means, said power means including means responsive to movement of a released article across said post for de-energizing said power means and interrupting downward movement of said post after each article has passed from said ramp onto said chute, a display window in said cabinet, a chamber within said cabinet registering with said window for receiving a display article, and electromagnetic means energized responsive to the discharge of the last article from said storage magazine and to said coin-actuated means for releasing said display article upon insertion of coins into said coin actuated means, said power means comprising a source of electric power, an electric motor drivingly connected to said post, a first conductor connecting said power source and said coin actuated means, said coin actuated means including a normally open switch closeable responsive to insertion of proper coinage, said de-energizing means comprising a first normally-closed pressure-responsive switch in the upper end of said post openable responsive to the passage thereover of an article, a second conductor connecting said normally-open switch and said first normally-closed pressure-responsive switch, a second pressure-responsive switch in the bottom of said newspaper storage magazine, a third conductor connecting said first and second pressure-responsive switches, a fourth conductor connecting said second pressure-responsive switch and said motor, said second pressure-responsive switch normally connecting said third and fourth conductors, said display window chamber having a drop door and a solenoid normally permitting said drop door to be latched in closed position when de-energized and releasing said door when energized, a third normally-closed switch openable responsive to the discharge of a newspaper from said display window chamber, a fifth conductor connecting said second and third switches, said second pressure-responsive switch normally connecting said third and fourth conductors and being constructed to disconnect said third and fourth conductors and connect said third and fifth conductors upon release of the last article from said article storage magazine, whereby to cut out said motor and to energize said solenoid to release said drop door upon receipt by said coin actuated means of proper coinage and thereby permitting said drop door to open and discharge the article from said display window chamber, said third switch de-energizing said solenoid responsive to discharge of the article from said display window chamber.

4,448,329

DISPENSER FOR TUBES OF FLUENT MATERIAL

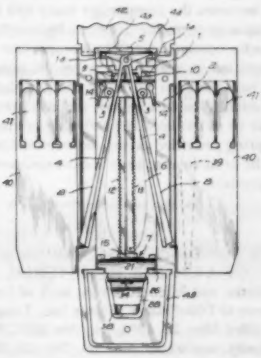
Hilario S. Vilaseca, Avinguda Joan Prim, 202 Granollers (Barcelona), and Ramon B. Mas, Avinguda Joan Prim, 221 Granollers (Barcelona), both of Spain

Filed Dec. 2, 1981, Ser. No. 326,901

Claims priority, application Spain, Dec. 9, 1980, 255.283; Oct. 21, 1981, 260.892

Int. Cl.³ B65D *35/28*

U.S. Cl. 222—96 **11 Claims**



1. A dispenser for tubes of fluent materials, comprising:

means for supporting a compressible tube of fluent material which is open at one end in a dispensing position,

two flexible wings extending along the length of and on either side of the tube when the latter is present and supported in the dispensing position, the respective ends of the wings distal from the open end of the tube being mounted so that the wings are movable towards each other so as to squeeze between them the tube in the dispensing position and thereby express its contents,

two guides, each guide being positioned on a side of a respective one of the wings,

a carriage on which the guides are mounted, said carriage being movable to move the guides along the wings away from the mounted ends thereof so as to urge the wings towards each other,

the guides being mounted on the carriage such that each of said guides is free to move relative to the carriage in an oblique direction relative to the length of a tube when the latter is present in the dispensing position, the guides being so movable in directions approaching each other as they move towards the mounted ends of the wings and away from the open end of a tube present in the dispensing position, and

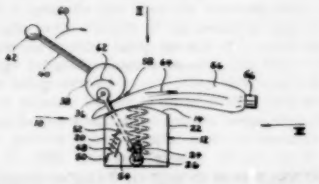
a ratchet mechanism operable to produce the said movement of the carriage in steps.

4,448,330

DISPENSER DEVICES FOR FLOWABLE CONTENTS IN COMPRESSIBLE TUBES

Pieter Roux, 6 Reservoir St., Malmesbury, South Africa 7300

Filed Jan. 8, 1982, Ser. No. 337,968
Int. Cl.³ B65D *35/28*
U.S. Cl. 222—101 **4 Claims**



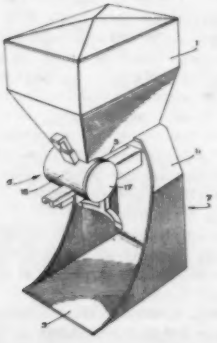
1. A dispenser device for dispensing flowable contents from a compressible tube, which includes a support having a base plate; a curved compressor body in the form of an elongated cylinder, which is mounted off-center rotatably to a pair of arms, which arms in turn are pivotably connected to the support; a connection means rotatably supporting the compressor body and having a pivotable connection on the support so as to define a gap between the compressor body and the base plate, into which gap a compressible tube can be inserted; a manually operable handle connected to the compressor body, which handle, on rotation, is adapted to move the compressor body towards the base plate for reducing the gap thereby exerting pressure on a tube placed between the compressor body and the base plate so as to force the flowable contents out of the tube and a spring provided acting between the support and at least one of the arms so as to urge the compressor body into an inoperative position.

4,448,331

DISPENSER FOR DISPENSING VARIABLE AMOUNTS OF A GRANULAR MATERIAL

Germain Millette, and Michel Martin, both of Longueuil, Canada, assignors to Distributeur Minute Inc., Longueuil, Canada

Filed May 20, 1982, Ser. No. 380,279
Claims priority, application Canada, Oct. 15, 1981, 388001
Int. Cl.³ B67D *5/06*; G01F *11/10*
U.S. Cl. 222—181 **11 Claims**



1. A dispenser, for dispensing predetermined amounts of a granular product, essentially comprising a hopper to hold a reserve of such a product and having, at its base, a device for measuring and distributing the product and further provided with a support to hold the hopper and the device in elevated position to allow the insertion of a container beneath the device to receive therefrom a predetermined quantity of the product, the said measuring and distributing device comprising:

a hollow cylinder and a rotary drum mounted therein, the drum having a first and a second cavity defining, at the periphery of the drum, two openings disposed side by side in a direction parallel to the axis of the drum and extending transversely of the said axis, the opening of the first cavity extending forwardly past the opening of the second cavity in one of the two directions of rotation of the drum;

two feed apertures, provided side by side through the drum cylinder and in communication with the inside of the hopper; the said cavities being arranged so that their openings be, in feeding position, simultaneously in registry with the feed apertures;

two dispensing apertures, provided side by side through the drum cylinder and arranged so as to communicate successively with the said drum cavities in dispensing position for discharging the product fed into the cavities;

wherein the spacing between the feed apertures and the dispensing apertures, about the drum, is provided to allow selective communication of the cavities either with the feed apertures or with the dispensing apertures, and

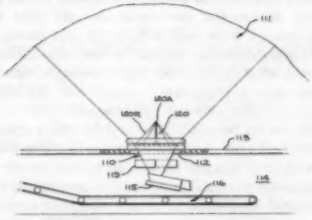
means to allow controlled rotation, in two steps, of the drum in the said one of the two directions of rotation from the said feed position of the cavities: in a first step, when only the opening of the first cavity is brought into registry with the dispensing aperture corresponding thereto and, in a second step and following further rotation of the drum, when the opening of the second cavity is brought into registry with the corresponding dispensing aperture thereof.

4,448,332

VIBRATORY STORAGE PILE DISCHARGER MEANS

Virgil C. Plummer, Jr., Louisville, Ky., assignor to Vibranetics, Inc., Louisville, Ky.

Filed Jun. 3, 1981, Ser. No. 270,117
Int. Cl.³ B65G *65/40*
U.S. Cl. 222—196 **8 Claims**



1. Improved vibratory storage pile discharger means for promoting the downward flow of material from a storage pile of a flowable material, such as coal, limestone, woodchips, sulphur and the like, through an opening in a generally horizontal surface on which the pile is supported and into another area located beneath that pile-supporting surface, comprising:

(a) an inverted hollow frustoconical conduit member generally vertically arranged within the opening in the pile-supporting surface with its long central axis concentrically aligned with that of the opening and having its wider upper inlet end supported by the pile-supporting surface through resilient means and also having its narrower lower outlet end extending through the opening and into an area located therebeneath;

(b) an upright conical member mounted generally vertically within the wider upper inlet end of said hollow frustoconical conduit member with its base being radially spaced apart from the interior walls thereof and having its long central axis concentrically aligned with those of the opening in the pile-supporting surface and said inverted hollow

frustoconical conduit member and also having its apex extending above the uppermost edge of said inverted hollow frustoconical conduit member; and

(c) drive means connected to said inverted hollow frustoconical conduit member for imparting vibratory movement to it and the upright conical member mounted therein with respect to the pile-supporting surface and the opening therethrough to transmit vibratory impulses to the pile and thus promote downward flow of material from the pile through said conduit member and into the area located beneath the pile-supporting surface.

4,448,333

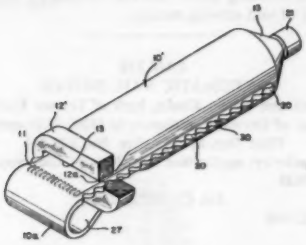
FLEXIBLE CONTAINER AND EXPELLER

Mario Ferrari, 8 Holden Rd., Cherry Hill, N.J. 08034

Continuation of Ser. No. 100,898, Dec. 6, 1979, Pat. No. 4,316,556. This application Feb. 18, 1982, Ser. No. 350,110

Int. Cl.³ B05B *11/04*

U.S. Cl. 222—214 **7 Claims**



1. A flexible container comprising:

a body having flexible sidewalls, which sidewalls define a compressible storage space,

the body terminating forwardly in a content dispensing opining and rearwardly in a closure which prevents escape of the contents,

at least one strip extending longitudinally of said storage space and projecting laterally from one side of said body sidewalls, said strip having a plurality of lateral corrugations spaced-apart along said storage space,

said corrugations defining distances along the storage space, whereby predetermined fractions of its contents may be dispensed by compressing the storage space up to a given corrugation, and

expeller means positioned between the closure and the dispensing opening, and being movable relative to the body from one of said corrugations to another,

the expeller means being so constructed as to engage the body in such manner that said movement progressively compresses the storage space between the two corrugations in a direction substantially perpendicular to the direction of lateral projection of said strip and urges the contents in said compressed space toward the dispensing opening.

4,448,334

CONTAINER AND DISPENSER FOR MATERIAL IN GRANULAR OR POWDER FORM

William Morris, 383 Ellsworth Ave., New Haven, Conn. 06511

Filed Jan. 18, 1982, Ser. No. 340,355

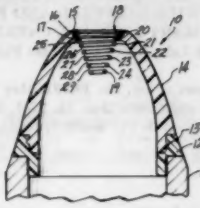
Int. Cl.³ A47G *19/24*

U.S. Cl. 222—230 **8 Claims**

1. A device for containing and dispensing material in granular or powder form comprising a container, a substantially unrestricted outlet opening defined at the upper end of said container,

a spring member of conical shape defined by helices of decreasing diameter about a longitudinal axis, said helices being uniformly spaced apart along the axis to permit dispensing of material therethrough,

said member being affixed to said container in said opening adjacent the larger helices thereof and depending into said container, the smallest helix defining a dispensing opening along said axis,



whereby a substance in said container may be dispensed between helices of said member, and said spring may be extended to break a build-up of material between said helices.

4,448,335

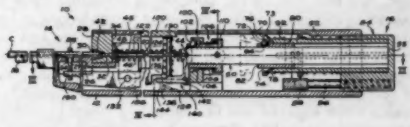
INCREMENTAL METERING DEVICE HAVING RESET MEANS

Thomas C. Jessop, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 26, 1982, Ser. No. 352,740

Int. Cl.³ G01F *11/00*

U.S. Cl. 222—391 **10 Claims**



2. A device for metering liquid from a container, comprising

means for ejecting liquid from such container, said means including a piston rod mounted for movement along a first path between an initial position and positions operative to eject liquid,

first biasing means for biasing said piston rod away from said container and said operative positions to said initial position,

movable actuator means couplable to said piston rod for moving said piston rod in incremental amounts against said biasing means, from said initial position to successive operative positions, said actuator means being mounted for reciprocation along a second path that is parallel to said first path,

second biasing means for biasing said actuator means to move along said second path away from said container to a rest position,

first one-way locking means for preventing movement of said piston rod by said first biasing means, along said first path away from said container, said first locking means comprising a first member adapted to roll relative to the surface of said piston rod, and a second member adapted to wedge said first member towards said piston rod when moved in only one direction relative to said piston rod, said locking means being operative when said actuator means is moving away from said container under the influence of said second biasing means, and

reset means for releasing said first one-way locking means, said reset means including moving means for moving said first member away from said second member of said first locking means,

whereby actuation of said reset means allows said piston rod to automatically move towards said actuator means and to said initial position under the influence of said first biasing means.

4,448,336

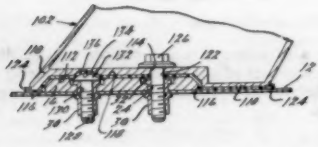
COMBINATION OF PERMANENT LUGGAGE CARRIER ADAPTERS WITH SELECTED AND REMOVABLE PRIMARY LUGGAGE CARRIERS

John A. Bott, 931 Lakeshore Dr., Grosse Pointe Shores, Mich. 48236

Continuation-in-part of Ser. No. 39,391, May 15, 1979, Pat. No. 4,277,009. This application Jun. 18, 1981, Ser. No. 274,868

Int. Cl.³ B60R 9/10

U.S. Cl. 224—309 **13 Claims**



1. A load carrying system for use in conjunction with a substantially horizontal surface of an automotive vehicle, said system comprising a plurality of polygonal-shaped receptacles spaced over said surface and permanently attached thereto, each of said receptacles projecting above said surface and having at least one opening for the reception of a blind fastener, a first load carrier adapted for carrying loads of one type, said first load carrier comprising elongated transversely extending elements and first mounting means having at least an opening therein and at least one bottom surface and having recess means associated with said bottom surface which substantially corresponds with the shape of each of said plurality of receptacles wherein said receptacles are substantially concealed when engaged said first mounting means to enable said transversely extending elements to be properly located with respect to said plurality of receptacles and removably secured thereto with said at least one opening of said first mounting means being aligned with said at least one opening of one of said receptacles, and a second load carrier adapted for carrying loads of another type, said second load carrier comprising elongated longitudinally extending elements and second mounting means having at least one opening therein and at least one bottom surface and having recess means associated with said bottom surface which substantially corresponds with the shape of each of said plurality of receptacles wherein said receptacles are substantially concealed in engagement with said second mounting means to enable said longitudinally extending elements to be properly located with respect to said plurality of receptacles and removably secured thereto, said first and second load carriers comprising interchangeable load carrying elements which are selectively attachable to said plurality of receptacles and removable therefrom.

4,448,337

ARTICLE CARRIER

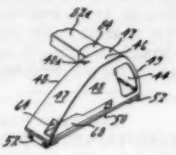
Gary M. Cronce, Port Huron, Mich., assignor to Masco Corporation, Taylor, Mich.

Filed May 6, 1982, Ser. No. 375,400

Int. Cl.³ B60R 9/00

U.S. Cl. 224—321 **12 Claims**

1. An article carrier for fastening to an exterior surface of a motor vehicle, said article carrier comprising a pair of longitudinal tracks fastened to said surface in a spaced apart, parallel relationship, a bracket fastened to each of said tracks, and a cross rail fastened between said brackets; wherein said bracket comprises a main body reciprocal fastening means selectively reciprocable to a clamped position securing said main body to said track, and driving means pivotally fastened to said main body for pivotable movement about a vertical axis spaced from said reciprocal fastening means and selectively operable to reciprocate said fastening means to said clamped position and



to secure said fastening means in said clamping position, said driving means has a ramp surface in sliding engagement with a surface of said reciprocal fastening means, said ramp surface biasing said fastening means into said clamping position in one orientation of said driving means.

4,448,338

PNEUMATIC NAIL DRIVER

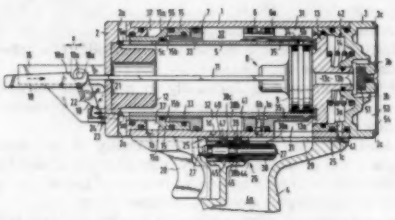
Eugen Graf, and Edwin Kindle, both of Triesen Liechtenstein, Fed. Rep. of Germany, assignors to Hilti Aktiengesellschaft

Filed Dec. 8, 1981, Ser. No. 328,741

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1980, 3047638

Int. Cl.³ B25C 1/04

U.S. Cl. 227—8 **1 Claim**



1. A pneumatic nail driver comprising an axially extending working cylinder having a front end and a rear end and arranged to receive a supply of compressed air, a working piston positioned within said working cylinder and arranged to be driven in the axial direction thereof from the rear end toward the front end of said working cylinder by compressed air supplied into said working cylinder, an inlet valve having an open position for supplying compressed air into driving contact with said working piston and a closed position for blocking the flow of compressed air into driving contact with said working piston, said inlet valve in combination with said working cylinder forming a control space, a safety valve mounted on said working cylinder and movable parallel to the axis of said working cylinder, means in operative engagement with said safety valve for moving said safety valve, said means including a sensing element movably mounted for movement opposite to the driving direction for moving said safety valve when said sensing element is pressed against a receiving material into which a nail is to driven, and a spring arranged to bias said sensing element in the driving direction, said safety valve is movable between a first position in which it supplies said control space with compressed air in the closed position of said inlet valve and a second position where it connects said control space in the open position of said inlet valve with the ambient atmosphere, wherein the improvement comprises that said means includes a shift lever having a first end in engagement

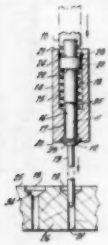
with said sensing element and a second end in engagement with said safety valve for moving said safety valve in a direction opposite to the movement of said sensing element, engagement cams spaced apart in the driving direction and associated with said sensing element, said shift lever displaceable into locking engagement with said engagement cams, said engagement cams are formed on said sensing element, a trip cam formed on said shift lever, said trip cam is movable between and into locking engagement with said engagement cams, the spacing between said engagement cams is greater than the width of said trip cam in the driving direction so that when said trip cam is in engagement with one of said engagement cams an amount of free play is provided between said trip cam and the other one of said engagement cams.

4,448,339

NAIL DRIVING AND RECESSING TOOL

Ronald Pettigrew, 42 Tennyson Ave., Westbury, N.Y. 11590

Filed Dec. 3, 1981, Ser. No. 327,237
Int. Cl.³ B25C *7/00*
U.S. Cl. 227—147 **4 Claims**



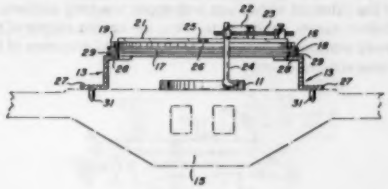
1. A nail driving and recessing tool for use with percussive equipment upon a predrilled and recessed work piece comprising an elongated nail driving shaft operatively engagable with said percussive equipment at one end, a nail driving portion on the other end of the shaft, a first and a second diameter portion on said shaft, said second diameter portion being smaller than the first diameter portion and forming the said nail driving portion, a sleeve slidably carried by the two-diameter nail driving shaft, a stepped elongated axial bore in said sleeve to receive the said shaft, a first large diameter portion of the bore being of a size to freely receive the larger diameter portion of the shaft, a second smaller diameter portion of the bore of a size to slidably receive the smaller diameter portion of the shaft therethrough to guide the nail driving portion of the second diameter portion of the shaft, said smaller diameter portion of the shaft being of a length to permit the smaller diameter shaft portion to advance beyond the sleeve and drive a nail into the recessed portion of the work piece and below the surface of said work piece, a spring carried within the large diameter portion of the bore and around the first diameter portion of the shaft to yieldably urge the sleeve in the direction of the work piece until the sleeve comes to bear against the surface of said work piece, and a third tapered, portion of the stepped bore in the sleeve at the nail driving end of the tool, said third diameter portion being of a size to engage and center the head of the nail to be driven when the nail head is located well above the surface of the work piece.

4,448,340

APPARATUS FOR REPLACING BOLSTER RINGS

Glen R. Lollis, 10405 Mockingbird Dr.; Marvin G. Marler, 9926 Orchard Ave., both of Omaha, Nebr. 68127; Joe P. Car, 5114 California St., Omaha, Nebr. 68132, and Sam J. John, 6208 Parker, Omaha, Nebr. 68104

Division of Ser. No. 171,121, Jul. 22, 1980, Pat. No. 4,330,076. This application Feb. 16, 1982, Ser. No. 349,263
Int. Cl.³ B23K *37/02*
U.S. Cl. 228—29 **2 Claims**



1. Apparatus useful in replacing a worn bolster ring on a freight car truck bolster which contains two pairs of mounting holes for side bearing cages which are spaced laterally from the axis of said ring a uniform distance, the apparatus comprising

a. a motorized circle cutting and welding machine including an annular track, and a movable carriage which is driven around the track by a motor and is adapted to carry torch cutting and welding devices;

b. diametrically opposed support members attached to the track and arranged to rest upon the upper surface of said bolster and hold the track parallel with the surface;

c. two locating pins attached to and depending from each support member, the pins being sized and positioned to fit said mounting holes and thereby center the annular track with respect to those holes;

d. a centering jig which is adapted to engage a replacement bolster ring and hold it against movement in a plane perpendicular to its axis; and

e. means for removably attaching the jig to the movable carriage in a position in which it is coaxial with, but at an elevation below, the track.

4,448,341

AUTOMATIC VEHICLE-BODY ASSEMBLING APPARATUS

Tsuneo Fujikawa, Ebina; Kazuyoshi Kamio, Yokohama, and Haruyoshi Takagishi, Yamato, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Dec. 11, 1981, Ser. No. 329,874
Claims priority, application Japan, Dec. 16, 1980, 55-177808
Int. Cl.³ B23K *37/04, 11/36;* B62D *65/00*
U.S. Cl. 228—45 **8 Claims**

1. An automatic vehicle-body assembling apparatus for automatically welding together an engine compartment assembly, a front floor assembly and a rear floor assembly to constitute a vehicle floor structure of an automotive vehicle, each of the engine compartment and front and rear floor assemblies being composed of a plurality of component members, comprising:

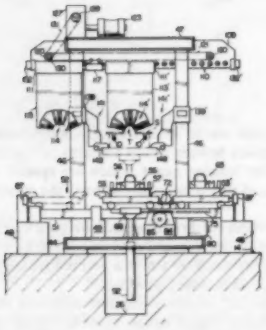
a frame structure having a fore-and-aft direction in which the engine compartment and front and rear floor assemblies and said vehicle floor structure are to be conveyed through the apparatus and a lateral direction horizontally perpendicular to the fore-and-aft direction, the frame structure including lower and upper base frames extending in lateral direction of the frame structure at the bottom and top, respectively, of the frame structure,

lower and upper working stations supported on said lower and upper base frames, respectively, each of the lower and

upper working stations including carrier means movable on said lower and upper base frames in lateral directions of the frame structure,

at least two jig assemblies each operative to hold in position the engine compartment and front and rear floor assemblies during each cycle of operation, the jig assemblies being carried on the carrier means of one of said lower and upper working stations, at least two welding units each operative to weld together the engine compartment and front and rear floor assemblies during each cycle of operation, the welding units being carried on the carrier means of the other of said lower and upper working stations,

first drive means operative to drive the carrier means of the lower working station to move in a lateral direction of the frame structure, and



second drive means operative to drive the carrier means of the upper working station to move in a lateral direction of the frame structure,

said jig assemblies being movable in a lateral direction of the frame structure alternately between a predetermined operative position within the frame structure and a predetermined outermost lateral position as the carrier means carrying the jig assemblies are driven by one of the first and second drive means, said welding units being movable in a lateral direction of the frame structure alternately between a predetermined operative position within the frame structure and a predetermined outermost lateral position as the carrier means carrying the welding units are driven by one of the first and second drive means.

4,448,342

METHOD AND DEVICE FOR TRACER CORRECTION IN A WELDING ROBOT

Riichi Abe, Hiratsuka; Katsuji Tsuiota, and Seiji Tsujikado, both of Isehara, all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Nov. 6, 1981, Ser. No. 318,952

Claims priority, application Japan, Nov. 17, 1980, 55-161781

Int. Cl.³ B23K *37/02*

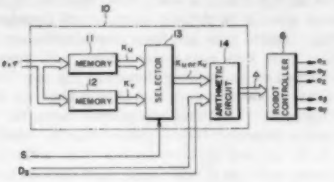
U.S. Cl. 228—102 **16 Claims**

11. A tracer correction method for a welding robot comprising steps of:

detecting, by a sensor having a predetermined direction, the torch tip error against weld line with respect to a coordinate system fixed to a torch,

reading out a coefficient value for converting the torch tip error into a correction value with respect to axes in which a robot body is driven corresponding to a torch posture, from a memory in which a set of such coefficient values are stored at addresses accessed by an address signal representing said torch posture,

performing arithmetic operations by an arithmetic circuit to obtain said correction value based on said coefficient value and a torch tip error value detected by the sensor, and



making correction with respect to said axis, using said correction value.

4,448,343

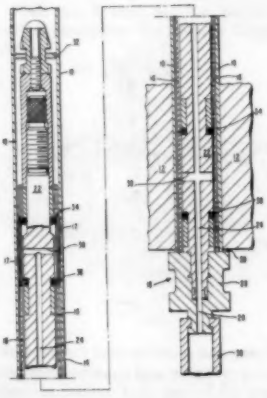
SLEEVE PREPARATION METHOD

Edgar L. Kochka, Greentree; Robert D. Burack, Pleasant Hills, and Kenneth E. Pfeiffer, Penn Township, Allegheny County, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 30, 1981, Ser. No. 307,354

Int. Cl.³ B23K *1/20*

U.S. Cl. 228—205 **6 Claims**



1. A method for preparing a metal sleeve for brazing comprising:

cleaning the outer surface of said sleeve;

depositing a braze material on the outer surface of said sleeve;

applying an adhesive of approximately 1.5% to 12% acrylic resin by weight dissolved in toluene to said braze material;

heating said sleeve to soften said adhesive; and

applying a flux to said adhesive whereby said adhesive causes said flux to be affixed to said braze material.

4,448,344

EGG CELL CONSTRUCTION

Henry A. Lord, Cape Elizabeth, Me.; Kenneth D. Bixler, Huntington, N.Y., and Richard F. Reifers, New Canaan, Conn., assignors to Diamond International Corporation, New York, N.Y.

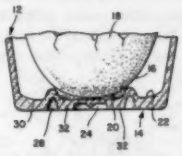
Filed Sep. 1, 1982, Ser. No. 413,915

Int. Cl.³ B65D *81/16*; D21J *7/00*

U.S. Cl. 229—2.5 EC **6 Claims**

1. In a molded egg carton having a plurality of egg cells, the improvement wherein the bottom of a said egg cell is provided with, internally of said egg cell, a crater depression to cradle

the tip of an egg resting therein, said crater being formed of a generally circular ridge encircling a depressed floor, said egg cell bottom having a thickened peripheral annular portion having an upper surface lower than the height of said circular ridge and peripherally surrounding said circular ridge, said circular ridge defining immediately therebelow and therewithin a circular groove so that the circular groove faces the bottom outside of said egg cell, a central depression of diameter less than the diameter of said crater and underlying said



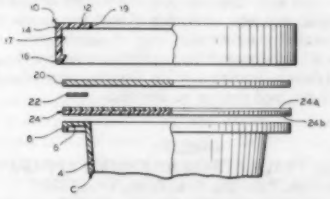
depressed crater floor along the central portion thereof, the wall between said depressed crater floor and said depression being relatively thin to provide a softened cushion for egg tip contact, and at least one pedestal for supporting said crater floor and located between said depression and said circular groove, said pedestal being of such thickness to extend from the crater floor to the bottom outside of said cell so that the bottom of said at least one pedestal and the bottom of said thickened peripheral portion normally lie in substantially the same plane.

4,448,345

COMPOSITE LID

Charles R. Helms, Malvern, Pa., assignor to Container Corporation of America, Chicago, Ill.

Filed Jul. 29, 1982, Ser. No. 402,939
Int. Cl.³ B65D *51/20*
U.S. Cl. 229—43 **1 Claim**



1. A composite lid for use in a sealable closure arrangement with a container having a rim surface formed of a heat sealable material, said lid comprising:

(a) an annular rim formed of molded plastic and including:

(i) a horizontally disposed, radially inner ledge;

(ii) a vertically disposed, radially outer skirt formed integrally with an outer portion of said ledge;

(b) a central panel formed of a sheet of relatively thin printable sheet material, such as paperboard, and having a marginal area bonded to the underside of said rim ledge;

(c) a membrane formed of an upper layer of Saran and a lower layer of polyethylene, said lower layer of polyethylene being compatible with the material of said container rim;

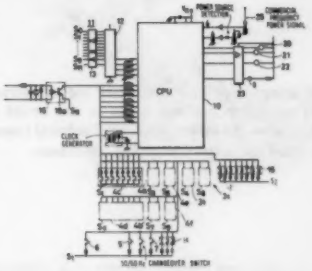
(d) a temporary adhesive of a wax type material filled with metal particles disposed between said upper layer of Saran and said central panel at a marginal area thereof above the sealing area of the container rim, said membrane having the marginal area of its upper side of said upper layer of Saran releasably secured to the underside of said central panel by said temporary adhesive which will maintain said membrane and central panel attached to each other during formation of the lid in an insert molding process but which will deteriorate when the underside of said membrane is releasably attached to said container rim by radio generated frequency sealing.

4,448,346

CONTROL SYSTEM FOR AUTOMATIC VENDING MACHINES

Masami Kuwaki; Youichi Hatada, and Satoru Umino, all of Kanagawa, Japan, assignors to Fuji Electric Co., Ltd., Kanagawa, Japan

Filed May 6, 1982, Ser. No. 375,627
Int. Cl.³ F23N *5/20*; B67D *5/62*
U.S. Cl. 236—46 R **5 Claims**



1. A control system for an automatic vending machine adapted to control the temperature of thermal loads placed in the vending machine, comprising: time setting means, a loading switch actuated after the setting of a load in the automatic vending machine, a control switch means for selectively setting periods of positive operation of a refrigerator or heater and control circuit means responsive to signals from said time setting means, said loading switch and said control switch means, for placing said refrigerator or heater in an ON state continuously for a predetermined period of time just after the installation of the automatic vending machine, upon recovery of the power source after a power supply interruption and upon operation of said loading switch, and for thereafter carrying out positive ON-OFF control based on a time set by said control switch means and stopping the operation of said refrigerator or heater during a time outside of a period set by said time setting means.

4,448,347

HEAT PUMP SYSTEM USING WASTEWATER HEAT

Phillip E. Dunstan, 1022 S. 208th St., Seattle, Wash. 98148

Filed Dec. 9, 1981, Ser. No. 328,905
Int. Cl.³ G05D *23/00*
U.S. Cl. 237—2 B **13 Claims**

1. A heat pump system for heating water through the efficient use of heat from home wastewater while automatically avoiding freezing of the wastewater, comprising a plumbing network having:

(a) a wastewater storage tank to collect and circulate wastewater;

(b) a consolidated heat pump unit having a closed refrigeration loop, including:

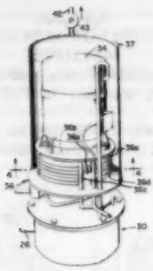
(i) an evaporator, at the bottom of a stack, to exchange heat between the wastewater and a refrigerant,

(ii) a compressor, at the top of the stack, connected to the evaporator,

(iii) a condenser, between the evaporator and compressor, connected to the compressor to exchange heat between the refrigerant and household water, and

(iv) an expander connected to the condenser and evaporator to close the loop; and

(c) a heated water storage tank to collect household water heated in the condenser,



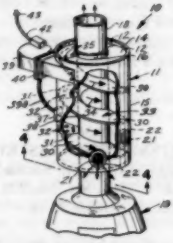
wherein the compressor and condenser are submerged in a water vessel so that household water in the vessel absorbs additional heat from the mechanical and electrical losses of the compressor, after the water leaves the condenser.

4,448,348

FORCED AIR FLUE HEATER DEVICE

Malcolm A. Bidwell, 30138 Lilac Rd., Valley Center, Calif. 92082

Filed Aug. 19, 1982, Ser. No. 409,667
Int. Cl.³ F24B *7/00*
U.S. Cl. 237—55 **1 Claim**



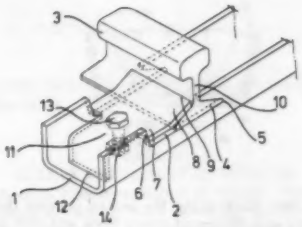
1. A flue heat reclaimer for woodburning stoves comprising a helical shaped divider ring adapted to fit over said flue with the inner edge adjacent thereto, said helical divider ring being divided into sections each being semi-circular in configuration, said sections being joined together by arcuate splice plate means, an outer cylindrical housing fitted over said helical divider ring, said housing including a top pair of semi-circular plates and means for mounting said plates to said housing, wherein the upper end of said helical divider ring is mounted to one of said top plates, a thermostatically controlled blower means being mounted on the upper end of said housing, said blower means being mounted to form a double air flow path in the helical divider ring, said housing further including bottom walls and plural air outlet means at the lower end of said housing.

4,448,349

RAIL SLEEPERS WITH RAIL CLAMPING DEVICES

Jan C. Wozniak, Thorneville, Isle of Man, assignor to Serni Limited, Douglas, Isle of Man

Filed Oct. 28, 1981, Ser. No. 315,939
Claims priority, application United Kingdom, Nov. 1, 1980, 8035201
Int. Cl.³ E01B *3/16, 9/32*
U.S. Cl. 238—62 **3 Claims**



1. A rail securement arrangement including a rail sleeper and means for gripping a pair of rails, each rail having first and second flange portions, said arrangement comprising:

a metallic U-shaped channel member including a base section with at least one orifice formed therein, and having flanged sections formed with slots at substantially a right angle to the longitudinal axis of said channel member for receiving said rail; said slots formed with a recessed portion to receive said first flange portion of said rail and a sloped portion opposite said recessed portion;

a T-shaped plate member and including an orifice, said T-shaped plate member being disposed in said slots in contact with said sloped portion of said slots and with said second flange portion of said rail; and

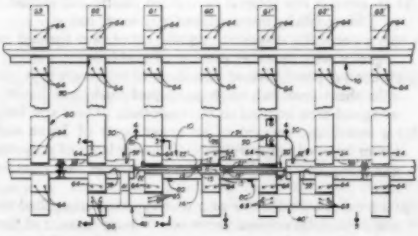
bolt means positioned through said orifice of said T-shaped member and said orifice in said base section of said channel member whereby tensioning of said bolt means causes said T-shaped plate member to push against said sloped portion of said slots and thus against said second flange of said rail thereby forcing said first flange portion of said rail into said recessed portion of said slots.

4,448,350

RAILROAD TRACK STRESS TRANSFER APPARATUS

Albert A. Phillips, P.O. Box 56A, Byars, Okla. 74831

Filed Aug. 6, 1982, Ser. No. 406,049
Int. Cl.³ E01B *11/08*
U.S. Cl. 238—231 **11 Claims**



8. Apparatus for interconnecting longitudinally extensive and expandable railroad rails positioned end-to-end and adapted to be secured to laterally extending cross-ties, comprising:

each of said rails having at one end thereof a tapered tongue,

said tongue having its maximum lateral dimension adjacent said respective rail end;

means for securing said rail ends in end-to-end alignment, said securing means including opposing tapered slot means correspondingly configured with said tapered tongues for receiving said tongues therein; and

means, longitudinally displaced from said securing means and bearing against each rail in direction substantially normal to its longitudinal extent, for laterally aligning one side of each said rail with a respective side of said securing means, said aligning means comprising tapered means for moving each said rail laterally as said rail moves longitudinally relative to said securing means.

4,448,351

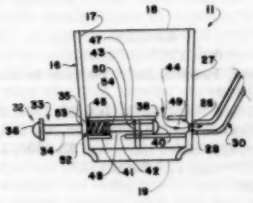
WATER FAUCET MODIFYING APPARATUS

Darrell D. Aldinger, 2211 Green Terrace Dr., and Roger B. Van Wagoner, 2309 Wyoming Ave., both of Billings, Mont. 59102

Continuation-in-part of Ser. No. 278,750, Jun. 29, 1981, abandoned. This application Jan. 28, 1983, Ser. No. 462,040

Int. Cl.³ B05B *1/16*

U.S. Cl. 239—25 **15 Claims**



1. Water faucet modifying apparatus including a housing, a main passage extending through said housing, an inlet at one end of said main passage, an outlet at the opposite end of said main passage, removable connector means extending from said inlet for securing said inlet to a water faucet spout, aerating means connected with said outlet, a side passage in the sidewall of said housing communicating with said main passage intermediate said inlet and outlet, said side passage having an outlet at the periphery of said housing, a conduit extending from said side passage outlet in the direction of said inlet, said conduit including an outlet at the free end thereof, diverter means disposed within said housing adjacent the intersection of said side passage with said main passage thereof, said diverter means including a valve stem member extending into said main passage transversely thereto, said stem member including an actuator portion extending through the sidewall of said housing, sealing means disposed on the opposite end of said stem member, said sealing means being engageable with said side passage at the intersection thereof with said main passage, a first barrier section disposed across said main passage between said stem member and said outlet of said main passage, said first barrier section including an opening therethrough at a point adjacent said stem member opening in said housing sidewall, a second barrier section across said main passage between said stem member and said inlet of said main passage, said second barrier section including an opening therethrough at a point adjacent said side passage, a connector plate section extending between said first and second barrier sections, said connector plate section dividing the space between said barrier sections into two chambers, said connector plate section including an opening therethrough, said stem member extending through said connector plate opening, biasing means urging said stem member toward said side passage.

4,448,352

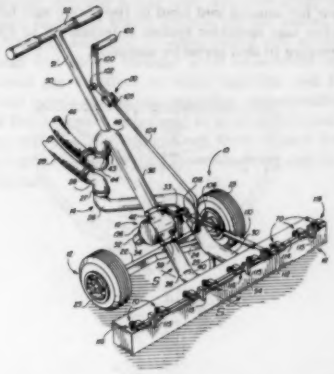
MOLTEN ASPHALT SPRAY MECHANISM

Carl C. Jacobson, Jr., Tempe, and Mark C. Manning, Chandler, both of Ariz., assignors to Crafco, Inc., Chandler, Ariz.

Filed Mar. 15, 1982, Ser. No. 358,251

Int. Cl.³ B05B *9/00*

U.S. Cl. 239—125 **9 Claims**



1. A manually manipulatable spray mechanism for use with a spray apparatus having a source of molten asphalt under pressure, said spray mechanism for spraying a coating of molten asphalt on selected areas of a paved surface and comprising:

(a) a wheeled carriage for manual manipulation;

(b) a conduit assembly carried on said carriage and having input and return conduits on one end for coupling to the supply apparatus;

(c) a spray bar carried on the other end of said conduit assembly and defining an internal chamber and having first and second ports in communication with said conduit assembly;

(d) at least a pair of nozzles extending from the internal chamber of said spray bar and movable between open and closed states;

(e) a single flow switching valve in said conduit assembly and having a first position in which the molten asphalt receivable in said conduit assembly is supplied to the first port of said spray bar circulated through the internal chamber thereof and is received from the second port of said spray bar and returned by said conduit assembly to the supply apparatus and a second position in which the molten asphalt receivable from the supply apparatus is simultaneously supplied to the first and second ports of said spray bar; and

(f) manually operable control linkage coupled to operatively interconnect said pair of spray nozzles and said flow swithing valve for simultaneous movement between a first operational mode wherein said flow switching valve is in the first position thereof and said pair of spray nozzles are closed and a second operational mode wherein said flow switching valve is in the second position thereof and said pair of spray nozzles are open.

4,448,353

POP-UP SPRINKLER

Zvi Livne, Shavei Zion, Israel, assignor to Dan Mamtirim, Israel

Filed Sep. 8, 1982, Ser. No. 415,971

Claims priority, application Israel, Sep. 14, 1981, 63830

Int. Cl.³ B05B *15/10*

U.S. Cl. 239—205 **10 Claims**

1. A pop-up sprinkler assembly for pop-up sprinkler systems, said sprinkler assembly comprising:

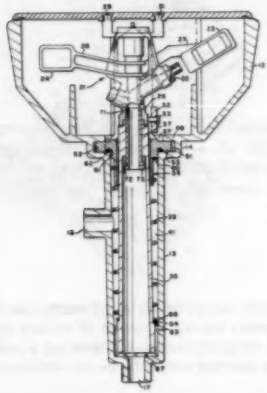
a rotating sprinkler head having a longitudinal dimension that is larger than the width of said head,

a housing unit having substantially rectangular cross-sections,

said housing unit set into the ground for receiving said sprinkler head therein,

the width of said unit being shorter than the length of said head,

means for causing said head to rise above said housing unit when said sprinkler system is turned on to apply water pressure to said sprinkler assembly,



means for causing said head to return to said housing unit when said system is turned off, and

means for aligning the length of said head with the length of said unit as said head returns to said unit,

said aligning means comprising cam follower means and cam follower track means for said cam follower means, said cam follower means comprising wheel means, said wheel means mounted to said head through axle means, and

said axle means being in parallel to the longitudinal axis of said head.

4,448,354

AXISYMMETRIC THRUST AUGMENTING EJECTOR WITH DISCRETE PRIMARY AIR SLOT NOZZLES

Steven G. Reznick, and Milton E. Franke, both of Dayton, Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 23, 1982, Ser. No. 401,163

Int. Cl.³ B64C *15/00*

U.S. Cl. 239—265.17 **8 Claims**

1. A circular thrust augmenting ejector, comprising:

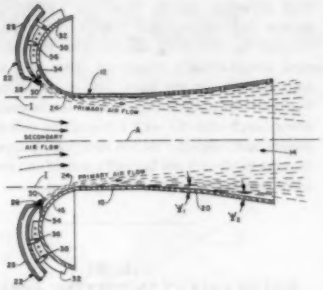
(a) a contoured inlet section having a surface;

(b) a constant area mixing section;

(c) a conical diffuser outlet section;

(d) said inlet, mixing and outlet sections merging one into the next in serial relationship, having a common central axis, and defining a central passageway; and

(e) a plurality of discrete primary nozzles positioned at the entrance but spaced from the surface of said contoured inlet section for injecting a primary flow of high velocity air into said inlet section with a trajectory generally paral-



lel thereto and thereby entraining a secondary flow of ambient air into said central passageway of said ejector.

4,448,355

WATERING PISTOL

Gianfranco Roman, Pasiano, Italy, assignor to Claber S.p.A., Fiume Veneto, Italy

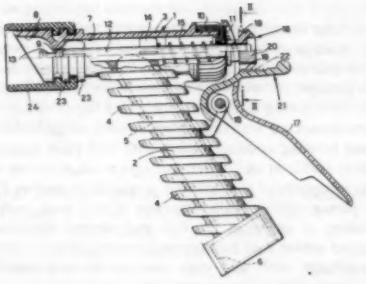
Continuation of Ser. No. 276,248, Jun. 22, 1981, abandoned.

This application Sep. 14, 1983, Ser. No. 532,091

Claims priority, application Italy, Jun. 23, 1980, 22101/80[U]

Int. Cl.³ B05B *9/10*

U.S. Cl. 239—526 **7 Claims**



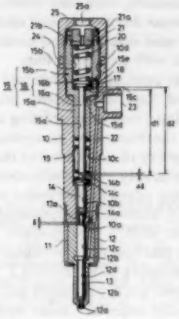
1. A pistol-grip, liquid-dispensing device comprising: a casing having an internal conduit terminating in a dispensing spout; an axially movable stem located in said conduit and carrying at one end a shutter member for opening and closing said spout upon axial movement of said stem in opposite directions, means for spring biasing said stem toward a closed position, said stem having an opposite end located outside said casing; and operating handle cooperating with said stem opposite end for imparting axial movement thereto in a direction to open said spout; and a latching device for releasably latching said stem in preselected spout-open positions, said latching device including a pawl member and a toothed rack member biased toward engagement with each other, one of said members being fixed to and rotatably movable with said stem opposite end outside of said casing and the other of said members being fixed to and deflectably carried by said casing adjacent said stem opposite end and selectively engageable with said one member outside of said casing.

4,448,356

DOUBLE-INJECTION TYPE FUEL INJECTION VALVE

Nobuyuki Nakajima, and Katumi Hiruma, both of Matsuyama, Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Mar. 24, 1982, Ser. No. 361,583
Claims priority, application Japan, Apr. 3, 1981, 56-47356[U]
Int. Cl.³ F02M 45/08
U.S. Cl. 239—533.5 **4 Claims**



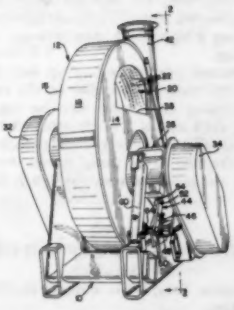
1. A fuel injection valve comprising: an injection nozzle having a nozzle needle liftable in response to fuel pressure; a nozzle holder supporting said injection nozzle; a first spring arranged within said nozzle holder; a first movable spring seat coupled to said nozzle needle and supporting said first spring; a first adjusting threaded member threadedly engaging said nozzle holder in a direct manner, said first adjusting threaded member defining therein an internal space opening at one end in an end face of said first adjusting threaded member remote from said injection nozzle, said first adjusting threaded member having another end facing toward said injection nozzle and disposed in urging contact with said first spring, said first adjusting threaded member being rotatable for axial displacement relative to said nozzle holder, said axial rotative displacement of said first adjusting threaded member causing a change in the setting load of said first spring; a second spring accommodated within said internal space of said first adjusting threaded member; a second movable spring seat accommodated within said internal space of said first adjusting threaded member and supporting said second spring, said second movable spring seat extending in part through said another end of said first adjusting threaded member facing toward said injection nozzle; a second adjusting threaded member threadedly fitted in said open end of said internal space of said first adjusting threaded member in a manner rotatable relative thereto for axial displacement and urging said second spring, said axial rotative displacement of said second adjusting threaded member causing a change in the setting load of said second spring; said second movable spring seat being urged by said second spring in a direction toward said injection nozzle, said second movable spring seat having one end disposed in facing relation to said first movable spring seat and adapted to have said one end spaced from said first movable spring seat by a predetermined gap when said nozzle needle is in a seated position thereof, said second spring and said second movable spring seat being so disposed that said first and second springs have a combined force thereof acting upon said nozzle needle when said nozzle needle is lifted beyond said predetermined gap, whereby said first spring has a setting load thereof adjustable by rotation of said first adjusting threaded member, while said second spring has a setting load thereof adjustable by rotation of said second adjusting threaded member; and a shim arranged within said internal space of said first adjusting threaded member and interposed between said second movable spring seat urged by said second spring and a seating surface formed in said internal space to determine a position of said second movable spring seat relative to said first movable spring seat, which is assumed when said nozzle needle is in said seated position thereof, said shim having a thickness selected as a function of the difference between the distance between a predetermined point on said first movable spring seat in a position assumed when said nozzle needle is in said seated position thereof, and a predetermined point on said first adjusting threaded member and the length of a predetermined portion of said second movable spring seat so that said predetermined gap is provided between said first movable spring seat and said second movable spring seat; whereby lifting of said nozzle needle from said seated position thereof causes corresponding lifting of said first movable spring seat against the force of said first spring through a lift determined by said predetermined gap to effect an initial injection, and further lifting of said nozzle needle causes further corresponding lifting of said first movable spring seat to urge said second movable spring seat against the combined force of said first and second springs to lift said second movable spring seat to effect a main injection.

4,448,357

ROTARY MACERATOR

Stanley D. Harlow, Willowbrook, and Donald Alexander, Plainfield, both of Ill., assignors to International Harvester Co., Chicago, Ill.

Filed Mar. 8, 1982, Ser. No. 355,794
Int. Cl.³ B02C 4/32
U.S. Cl. 241—32 **7 Claims**



1. In a macerator having a rotary perforated die ring and a roller operative within the die ring to press material through the die ring perforations as the ring is rotated, the combination with overload release structure comprising:

means mounting said roller in a fixed rotational axis operative position and for bodily pivotal movement between fixed rotational axis operative position and inoperative position relative to said die ring;

shearable means retaining said roller in the fixed rotational axis operative position and shearable under a predetermined overload to permit the roller to swing to its inoperative position; and

means operative in response to shearing of said shearable means for retaining the roller in its inoperative position thereby minimizing overload damage to the macerator.

4,448,358

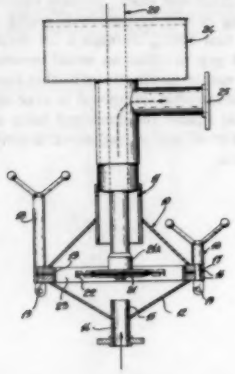
HIGH SPEED FLUID GRINDING AND DISPERSER MILL

Jean G. Menard, Quebec, Canada, assignor to NL Chem Canada, Inc., Montreal, Canada

Continuation-in-part of Ser. No. 62,344, Jul. 31, 1979, abandoned. This application Jul. 10, 1980, Ser. No. 168,219

Int. Cl.³ B02C *18/10*

U.S. Cl. 241—39 **10 Claims**



1. A continuous high speed grinding and disperser mill and classifier for fluids comprising,

an enclosed vessel having a conically shaped top and an inverted conically shaped bottom and having an annular wear ring in the approximate center of the vessel,

a shaft rotatable about a vertical axis extending downwards into the vessel terminating at an end in the approximate center of the vessel,

an impeller attached to the end of the shaft adapted to rotate within the wear ring, the impeller being in the form of a circular disc with a plurality of shear blades at the periphery producing a high shear zone between the blades and the wear ring,

an axially directed inlet extending up into the vessel and being directly below the impeller on the veritcal axis,

an outlet extending downward into the vessel positioned around the shaft and at a predetermined height directly above the impeller on the vertical axis such that a flow of fluid from the inlet to the outlet passes through the high shear zone, and means to rotate the shaft and impeller.

4,448,359

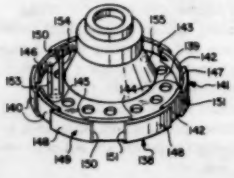
COMBINATION DRAIN PUMP AND GRINDING APPARATUS

Theodore F. Meyers, Troy, Ohio, assignor to Hobart Corporation, Troy, Ohio

Filed Jun. 10, 1982, Ser. No. 387,067

Int. Cl.³ B02C *18/42*

U.S. Cl. 241—46.06 **8 Claims**



1. In combination with a vessel for containing a quantity of fluid having food soil suspended therein and having a drain line for draining fluid therefrom, a combination drain pump and grinding apparatus for grinding food soil and pumping fluid and food soil from said vessel through said drain line, comprising:

housing means having a side wall and a floor defining a pump chamber;

means defining an inlet opening above said pump chamber and communicating with said vessel;

said housing means defining at least one pump outlet extending through said side wall and communicating with said chamber and with said drain line;

a waste impeller positioned within said chamber and having a disk-shaped base substantially parallel to and spaced above said floor, said base defining a plurality of soil-sizing orifices therethrough, an upstanding rim extending about a periphery of said base and including an inner wall defining a plurality of radially-extending, substantially vertical cutting edges and an outer wall defining a plurality of radially-extending, substantially vertical pumping vanes, and at least a first breaker tooth extending upwardly from said base and positioned inwardly of said rim;

at least one stationary tooth having a vertical cutting edge extending downwardly adjacent said inner wall such that rotation of said impeller causes said stationary tooth to pass between said inner wall and said breaker tooth such that said cutting edges come into opposing close proximity to said cutting edge of said tooth;

means for mounting said impeller for rotation about a vertical axis; and

means associated with said mounting means for rotating said impeller.

4,448,360

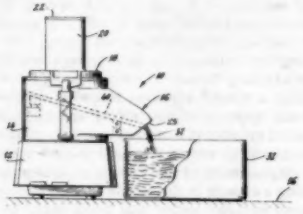
CONTINUOUS OUTPUT VIBRATING DECK FOOD PROCESSOR

James E. Williams, Stamford, Conn., assignor to Cuisinarts Research & Development, Inc., Greenwich, Conn.

Filed Sep. 30, 1981, Ser. No. 307,110

Int. Cl.³ B02C *18/06, 18/08*

U.S. Cl. 241—92 **28 Claims**



1. In a food processor of the type including a base housing having an electric motor drive, a bowl mountable on said base housing for enclosing a rotary food processing tool within said bowl, said tool being rotatable within said bowl by said electric motor drive, a removable cover adapted to be secured in position on said bowl, a feed tube forming a passageway for feeding food items into said bowl for processing by the rotating tool, an output vibrating deck apparatus comprising:

a chute having a discharge end projecting laterally from said bowl for directing food processed by said food processing tool out of said bowl,

a vibratable inclined deck mounted in said bowl beneath said food processing tool for relative movement between said inclined deck and said bowl, said inclined deck extending on a downward incline toward and within said chute, and

vibrating drive means coupled to said deck for moving said deck relative to said bowl for causing food processed by

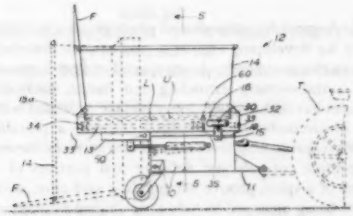
said rotary food processing tool deposited on said deck to be guided and propelled by said vibrating deck into and through said chute for discharge from said discharge end of the chute into an external container.

4,448,361

SELF-LOADING BALE DISINTEGRATING MACHINE

Dewey R. Marcy, 3430 - 13th St., Greeley, Colo. 80631

Continuation of Ser. No. 227,991, Jan. 23, 1981, abandoned, which is a continuation-in-part of Ser. No. 146,447, May 5, 1980, abandoned. This application May 23, 1983, Ser. No. 484,210
Int. Cl.³ B02C *13/08, 13/286*
U.S. Cl. 241—101.7 14 Claims



1. A self-loading machine for disintegrating and discharging a mass of crop material comprising:

a mobile chassis having a pair of opposite ends with respect to a normal path of travel thereof;

a container on said chassis having an internal mass-receiving area bounded at lateral extremities by normally generally upwardly projecting, mass confining agitator means,

said confining agitator means being rotatable as a unit about a normally generally upwardly projecting axis passing through said mass-receiving area, and the container having an open entry mouth to said area defined by normally uppermost, end extremities of said confining agitator means;

apparatus associated with the container for disintegrating and discharging a mass of material contained therein as said confining agitator means is rotated to agitate the mass after the latter is loaded into said receiving area;

means mounting said container for fore-and-aft tipping movement relative to the chassis between a raised, disintegrating position and a lowered, self-loading position in which the confining agitator means projects generally horizontally with a lower portion thereof generally adjacent the ground and said axis of rotation extending generally parallel to said path of travel,

said container being configured for slipping said confining agitator means under and around the mass to scoop the same into said mass-receiving area in a self-loading action upon shifting of the chassis toward the mass along said path of travel with the container lowered and said mouth thereof leading; and

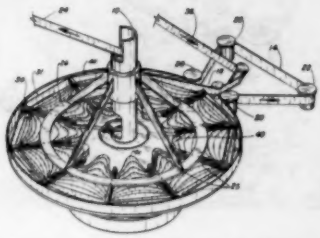
means for effecting said movement of the container between said disintegrating and self-loading positions.

4,448,362

METHOD OF AND APPARATUS FOR THE TAPE LOADING AND USE OF A SINGLE TURNTABLE IN THE RENDITION OF A TAPED PROGRAM

J. Ralph Johnson, 573 Willham Loop, La Place, La. 70068

Continuation of Ser. No. 249,382, Mar. 31, 1981, which is a continuation of Ser. No. 83,771, Oct. 11, 1979, abandoned, which is a continuation of Ser. No. 844,471, Oct. 21, 1977, abandoned, which is a continuation of Ser. No. 736,277, Oct. 27, 1976, Pat. No. 4,066,221. This application Sep. 28, 1982, Ser. No. 425,641
Int. Cl.³ B65H *17/48*
U.S. Cl. 242—55.19 R 7 Claims



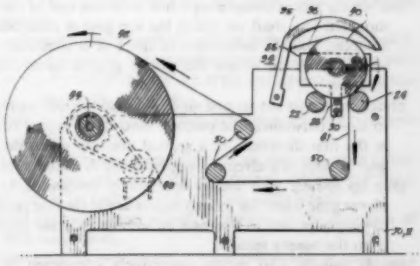
1. A tape-handling unit comprising a turntable rotatable about an axis, and means for holding loops of a tape on edge against the turntable along a plurality of radii of the turntable and permitting movement of the tape radially along each radius while restricting circumferential movement of the tape across the radius, wherein the holding means is rotatable about the axis of the turntable, and means for rotating the turntable and the holding means in synchronism.

4,448,363

REWINDER APPARATUS

Donald F. Mukenschnabl, 4026 Elm, Downers Grove, Ill. 60515

Filed Feb. 26, 1981, Ser. No. 238,486
Int. Cl.³ B65H *23/08*
U.S. Cl. 242—67.3 R 35 Claims



1. A rewinder apparatus for receiving a roll end having material thereon comprising:

free-wheeling means for supporting said roll end for feeding said material therefrom;

end means for positioning said roll end on said free-wheeling means for supporting the roll end;

said roll end having material thereon;

collector means for receiving and accumulating said material; and,

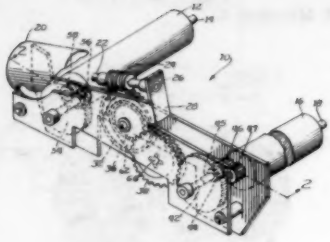
means for selectively pushing against said roll end responsive to a control stimulus including means for selectively braking said roll end wherein said means for selectively resiliently braking includes tension arms having pneumatically positioned straps.

4,448,364

REVERSIBLE RIBBON DRIVE

Richard Frystak, Park Ridge; Robert F. Johnston, Wildwood, and John R. Flint, Barrington, all of Ill., assignors to Bell & Howell Company, Chicago, Ill.

Filed Apr. 9, 1982, Ser. No. 366,948
Int. Cl.[3] G11B 15/44; B65H 17/02, 59/38
U.S. Cl. 242—674 4 Claims



1. A web drive system for automatically reversing the direction of travel of the web when reaching the end of the web comprising:

a supply spindle having means to engage one end of the web;

a take up spindle having means to engage the opposite end of the web;

the supply and take up spindles adapted to receive a supply of web to be wound thereon;

electric motor means with an output shaft rotating in a first direction;

a sun gear operatively connected to the motor and driven in a first direction in response to the motor being driven in a first direction;

a planet gear engaging the sun gear and driven by the sun gear;

linking means to maintain the planet gear in engagement with the sun gear;

the linking means comprising a link with one end of the link mounted to a shaft on which the sun gear is mounted for rotation, and the other end of the link is mounted to a second shaft on which the planet gear is mounted for rotation;

clutch means on the second shaft to cause the linking means to move between a first position when the sun gear rotates in the first direction, to a second position when the sun gear rotates in a direction opposite the first direction;

take up spindle gear means operatively connected to the planet gear when the linking means are in the first position to supply power to the take up spindle to draw the web from the supply spindle;

supply spindle gear means operatively connected to the planet gear when the linking means are in the second position to supply power to the supply spindle to draw the web from the take up spindle after the take up spindle has had the web wound thereon;

motor current sensing means to sense the rise in motor current due to the increase in load when the end of the web on the supply reel is reached;

control means operated responsive to the motor current sensing means sensing the rise in motor current to reverse the direction of rotation of the output shaft to a direction opposite the first direction;

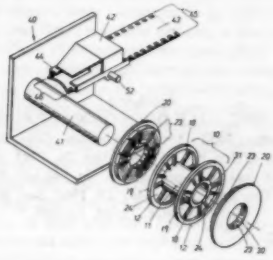
whereby upon each reversal of the gear means the direction of web travel is reversed and the supply spindle becomes the take up spindle and the take up spindle becomes the supply spindle.

4,448,365

FILM DEVELOPING SPOOL

Helmut Petsching, Gummersbach; Walter Kremer, Bergneustadt; Rainer Bernhardt, Bergneustadt, and Johannes J. Bockemuehl-Simon, Bergneustadt, all of Fed. Rep. of Germany, assignors to JOBO Labortechnik GmbH & Co. KG., Gummersbach, Fed. Rep. of Germany

Filed Mar. 29, 1982, Ser. No. 363,235
Claims priority, application Fed. Rep. of Germany, Apr. 3, 1981, 3113465; Nov. 26, 1981, 3146802
Int. Cl.[3] B65H 75/14, 75/28
U.S. Cl. 242—71.8 20 Claims



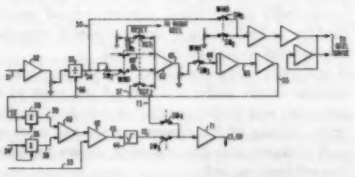
1. A spool for strip-shaped photographic material, particularly for developing and/or drying of such material, comprising an elongated core having spaced end portions each including a transversely extending end flange, each of said end flanges having an axially inner surface provided with a plurality of circumferentially spaced cut-outs; a plurality of spot supports projecting from each of said surfaces intermediate the respective cut-outs and defining first portions of successive turns of a spiral groove surrounding said core, said spot supports being arranged to hold strip-shaped photographic material on said spool in a position spirally surrounding said core; and a plurality of plug portions shaped to enter the respective cut-outs, each such plug portion having partial turns constituting second portions of the turns of said spiral groove so that the partial turns of the inserted plug portions substantially complete the groove in conjunction with the spot supports, said plug portions being attachable to said end flanges for loading of the photographic material onto the spool and thereafter detachable prior to treatment of the loaded photographic material.

4,448,366

COIL DIAMETER TRACKING SYSTEM AND TENSION REGULATION SYSTEM USING SUCH TRACKING SYSTEM

Jan M. Fludzinski, Williamsville, N.Y., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 8, 1982, Ser. No. 396,211
Int. Cl.[3] B65H 77/00; H02P 7/68
U.S. Cl. 242—75.51 4 Claims



1. Apparatus for rolling material from a pay-off reel driven

by a first motor drive to a rewind reel driven by a second motor drive, comprising:

means for measuring the instantaneous diameter d_X of one of said reels and for deriving a first signal representative of d_X during the rolling operation;

means for calculating the instantaneous diameter D_X of the other of said reels in accordance with the formula:

$$D_X = \sqrt{D_1^2 + d_1^2 - d_X^2}$$

where D_1 is the initial diameter of one of said reels and d_1 is the initial diameter of the other of said reels and for deriving a second signal representative of D_X;

first means responsive to said first signal for controlling the motor drive associated with said one reel in relation to the ratio ϕ_1/d_X, where ϕ_1 is the flux of the motor drive associated with said one reel;

second means responsive to said second signal for controlling the motor drive associated with said other reel in relation to the ratio ϕ_2/D_X, where ϕ_2 is the flux of the motor drive associated with said other reel;

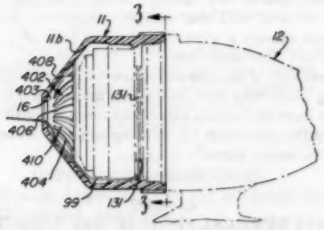
said first and second control means being controlled independently to provide desired tensions upon said pay-off and rewind reels, respectively.

4,448,367

SPIN CASTING TYPE REEL WITH DRAG REDUCING FRONT COVER

John W. Puryear, Tulsa, Okla., assignor to Brunswick Corporation, Skokie, Ill.

Filed May 20, 1982, Ser. No. 380,233
Int. Cl.³ A01K *89/01*
U.S. Cl. 242—84.2 A **14 Claims**



1. In a spin casting type fishing reel having a reel structure comprising: front cover means having a line guide therein, rear cover means, central mounting plate means, the plate means being an individual component, the plate means having a forwardly facing front wall and a rearwardly facing back wall, a spool for storing fishing line mounted on the front wall, line pickup means mounted on the front wall between the spool and front cover, means mounted in cooperation with the pickup means and the plate means to permit line to be cast off the spool and then rewound thereon, the line when cast or rewound passing through the line guide;

the improvement characterized in that the front cover has

a front portion that is conical in shape with the line guide located substantially at the apex of the cone,

the front conical portion have an outer surface and an inner surface,

spiral-shaped ribs formed on the inner surface and facing rearwardly of the front cover,

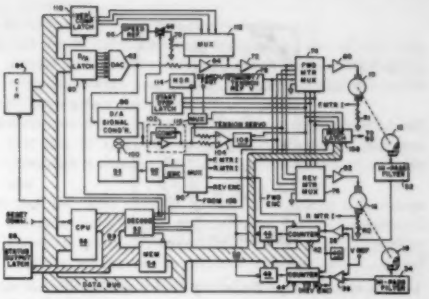
line from the spool passing over the inner surface of the conical portion and contacting the facing surfaces of the spiral-shaped ribs reducing contact of the line with the front cover thereby increasing the casting efficiency.

4,448,368

CONTROL FOR TAPE DRIVE SYSTEM

Edward S. Skalko, Cromwell, Conn., assignor to Raymond Engineering Inc., Middletown, Conn.

Filed Mar. 23, 1982, Ser. No. 361,116
Int. Cl.³ B65H *77/00*; G11B *15/32, 15/48*; H02P *7/68*
U.S. Cl. 242—186 **38 Claims**



1. Apparatus for transferring a web between a pair of rotatable reels along a transfer path comprising:

first drive means for selectively imparting rotation in a first direction to a first of the reels, said first drive means including an electric motor having an output shaft coupled to the first reel;

second drive means for selectively imparting rotation in a second direction opposite to said first direction to the second reel whereby a web stored on the reels may be selectively transferred between said reels by exercising control over the operation of said drive means, said second drive means including an electric motor having an output shaft coupled to the second reel;

means for sensing the rotational speed of said drive means motor output shafts and providing signals commensurate therewith;

means for digitally encoding said sensed rotational speed signals;

means responsive to said digitally encoded signals for calculating the actual instantaneous linear velocity of the web at a point intermediate the reels and generating a signal commensurate therewith;

means for generating a desired web linear velocity reference signal;

means for comparing said signal commensurate with calculated linear velocity with said desired velocity reference signal to provide a linear velocity error signal;

means for generating signals indicative of the direction of web movement;

means responsive to an input command signal for generating a variable energizing signal for said first drive means motor, the magnitude of said energizing signal determining the motor output shaft rotational speed;

means responsive to an input command signal for generating a variable energizing signal for said second drive means motor, the magnitude of said energizing signal determining the motor output shaft rotational speed; and

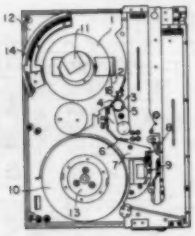
means responsive to said velocity error signal and to a signal indicative of web movement direction for delivering said velocity error signal as the input command signal to only the energizing signal generating means associated with the drive means which will produce the desired direction of web movement to vary the energization of the electric motor therein to obtain constant linear web velocity at the said intermediate point.

4,448,369

TAPE THREADING DEVICE

Michinori Watanabe, Odawara, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed May 26, 1982, Ser. No. 382,102
Claims priority, application Japan, May 29, 1981, 56-81067
Int. Cl.³ G03B *1/04, 1/56;* G11B *15/32*
U.S. Cl. 242—195 **3 Claims**



1. An automatic tape threading device suitable for use with a tape system comprising a supply reel and a takeup reel arranged vertically in superposed one above the other, comprising:

a passage having an opening in the vicinity of said supply reel and extending downwardly to said takeup reel for transporting a tape;

a threading chute located in the vicinity of said supply reel and including an outer surface for guiding a leading end of the tape to the opening, said outer surface ending at the opening of said passage, and

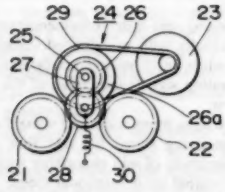
means located between said outer surface and said opening for generating an air jet stream ejected through said opening toward the interior of said passage.

4,448,370

TAPE TRANSPORT MECHANISM

Kazumi Miyazi, and Akira Osanai, both of Tokyo, Japan, assignors to Olympus Optical Company Limited, Tokyo, Japan

Filed Oct. 15, 1981, Ser. No. 311,612
Claims priority, application Japan, Oct. 16, 1980, 55-147438[U]
Int. Cl.³ G03B *1/04;* G11B *15/32*
U.S. Cl. 242—201 **3 Claims**



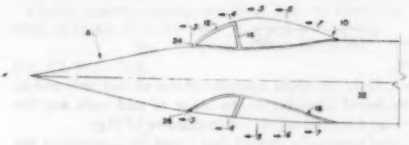
1. A tape transport mechanism for use in a tape recorder comprising a supply reel base and a take-up reel base each having a rotary gear and arrangd at a given distance apart, a rotatable lever arranged between the reel bases, a rotating gear rotatably supported by the rotatable lever and said rotating gear having a shaft arranged at a position deviated from a line connecting the centers of both reel bases, in the stopped condition of said mechanism the rotating gear is slightly meshed with the rotary gear of each reel base with the rotatable lever centered between said reel bases, and a drive source for driving the rotating gear in the forward and reverse directions.

4,448,371

CAMOUFLAGED AIRCRAFT

Carlisle K. Ferris, 50 Moraine Rd., Morris Plains, N.J. 07950

Division of Ser. No. 152,300, May 22, 1980, Pat. No. 4,406,428.
This application Sep. 28, 1982, Ser. No. 425,378
Int. Cl.³ F41H *3/00*
U.S. Cl. 244—1 R **6 Claims**



1. A camouflaged and deceptive perception distorted aircraft, comprising:

a. an aircraft fuselage having nose, tail, top, bottom and side surfaces, and longitudinal and vertical axes;

b. a real cockpit canopy on said top surface having length, width and height dimensions;

c. a simulated cockpit canopy on said bottom surface positioned substantially in the same general area as said real cockpit canopy so that only one of said cockpit canopies is visible when said aircraft is perceived directly above said top surface or directly below said bottom surface;

d. said simulated cockpit canopy having dimensions simulating the length, width and height of said real cockpit canopy;

e. at least one of said simulated cockpit canopy dimensions being substantially greater than the corresponding length, width or height dimension of said real cockpit canopy;

f. said simulated cockpit canopy when viewed from below said aircraft at an angle of approximately 45° from the vertical axis of the fuselage being a visually identical projection of said real cockpit canopy when said real cockpit canopy is viewed above said aircraft at substantially the same angle; and,

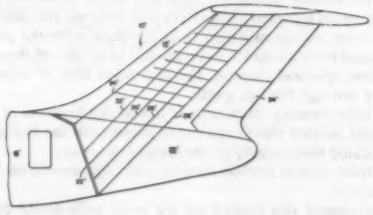
g. at least one of said simulated cockpit canopy dimensions being observable from below said aircraft at a substantial angle from the vertical axis of said fuselage thus enhancing deceptive perception by reducing angular viewing distortion by enemy aircraft.

4,448,372

AIRCRAFT VERTICAL FIN-FUSELAGE STRUCTURAL INTEGRATION SYSTEM

Robert J. Larson, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Sep. 30, 1981, Ser. No. 307,107
Int. Cl.³ B64C *1/26*
U.S. Cl. 244—87 **20 Claims**



1. An aircraft vertical fin-fuselage structural integration system, comprising:

fuselage means;

single pressure bulkhead means disposed within said fuselage means;

vertical tail fin means disposed atop the rear portion of said fuselage means; and

a plurality of structural spars disposed within said vertical tail fin means,

all of said vertical tail fin structural spars being directly connected to said single fuselage pressure bulkhead means.

4,448,373

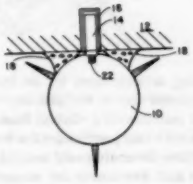
ELASTOMERIC SWAY BRACING AND EJECTOR SYSTEM

Jack R. Bates, and John W. Holtrop, both of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 15, 1980, Ser. No. 216,460

Int. Cl.³ B64C 1/22

U.S. Cl. 244—137 R **6 Claims**



1. An elastomeric sway brace for mounting stores on external surfaces of aircraft comprising:

an inflatable bladder on an external surface of said aircraft;

means for inflating said bladder to a predetermined pressure;

means for holding said stores against said bladder, said holding means connected through said bladder to the aircraft; and

means for retracting said holding means so as to compress said bladder with said stores such that release of said stores by the holding means permits expansion of said compressed bladder to eject said stores.

4,448,374

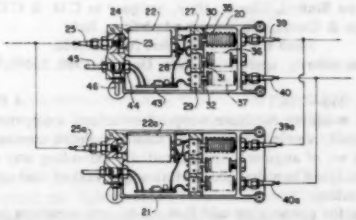
DEPLOYMENT SEQUENCER

James W. Duncan, Arden, N.C., assignor to Stencel Aero Engineering Corporation, Arden, N.C.

Filed Jun. 3, 1982, Ser. No. 384,636

Int. Cl.³ B64D 17/56, 17/58

U.S. Cl. 244—150 **4 Claims**



1. A sequencing apparatus for controlling the initiation of the deployment of a parachute following ejection of a seat from an aircraft comprising the combination of

a parachute and means carried by the seat for deploying the parachute;

left and right pitot tubes carried by said seat;

a housing carried by said seat;

first, second and third pneumatically operated bellows in said housing, each said bellows being operable between a retracted position and an extended position;

first, second and third switches in said housing, each of said switches including

a contact set, and

operator means connected to said contact set and to one of said bellows for closing said contact set when said one of said bellows is moved to a predetermined one of said positions;

a battery;

circuit means for connecting said contact sets of said first, second and third switches in series circuit relationship with each other and to said battery and said means for deploying said parachute;

first conduit means for coupling ambient air pressure to said first one of said bellows so that the switch associated therewith is closed at and below a predetermined altitude; and

second and third conduit means for coupling free stream pressures from said left and right pitot tubes to said second and third bellows so that each switch associated therewith is closed whenever the pressure to which the associated tube is exposed is indicative of an air speed below a preselected speed,

whereby closure of all three of said switches permits operation of said means for deploying.

4,448,375

FOLDING TRUSS MECHANISM FOR TRAILING EDGE FLAPS

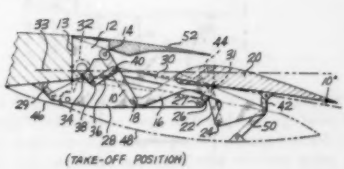
Gerald F. Herndon, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

PCT No. PCT/US82/01356, 371 Date Sep. 29, 1982, 102(e) Date Sep. 29, 1982, PCT Pub. No. WO84/01343, PCT Pub. Date Mar. 29, 1984

PCT Filed Sep. 29, 1982, Ser. No. 463,455

Int. Cl.³ B64C 9/16

U.S. Cl. 244—216 **30 Claims**



(TAKE-OFF POSITION)

1. A folding truss mechanism interconnected between a wing section, and a flap, for supporting and driving the flap from the wing section, comprising:

an upper frame portion carried by said wing section;

a lower frame portion carried by said wing section and positioned both below and aft of said upper frame portion;

a drive link having an upper end and a lower end;

first pivot means pivotally connecting the upper end of the drive link to the upper frame portion of said wing section for pivotal movement about a first pivot axis;

a support link having an upper and a lower end;

second pivot means pivotally connecting the lower end of said support link to the lower frame portion of said wing section for pivotal movement about a second pivot axis;

a swing link having an upper end and a lower end;

a slave link having a forward and an aft end;

third pivot means pivotally connecting the upper end of the swing link and the aft end of the slave link to the upper end of said support link, for pivotal movement about a third pivot axis;

fourth pivot means pivotally connecting the lower end of

the drive link to a forward portion of the flap for pivotal movement about a fourth pivot axis;

fifth pivot means pivotally connecting the lower end of the swing link to an aft portion of the flap for pivotal movement about a fifth pivot axis;

sixth pivot means pivotally connecting the forward end of the slave link to an intermediate portion of the drive link for pivotal movement about a sixth pivot axis;

said drive link having a forward position and said flap being stowed when the drive link is in its forward position;

said drive link having an intermediate position and said flap being in a take-off position when the drive link is in its intermediate position;

said drive link having an aft position and said flap being in a landing position when the drive link is in its aft position; and

drive means for swinging the drive link fore and aft about the first pivot axis.

4,448,376

HOLDER FOR AN ELECTRICAL COMPONENT

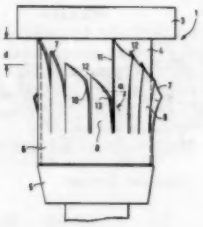
Martin Behrendt, Hagen, Fed. Rep. of Germany, assignor to Wickmann-Werke AG, Witten-Annen, Fed. Rep. of Germany

Filed Sep. 4, 1981, Ser. No. 299,636

Claims priority, application Fed. Rep. of Germany, Nov. 1, 1980, 3041610

Int. Cl.³ G12B *9/00*

U.S. Cl. 248—27.3 **12 Claims**



1. In a holder for an electrical component and adapted to be fixed by once-only plugging of said holder into an opening in a mounting panel, said holder comprising a housing which has a substantially cylindrical outer face carrying a resilient clamping element with a diameter adapted in use to exceed in part the inner diameter of said opening, and said housing being dimensioned to be pushed through said opening whereupon an edge of said clamping part running obliquely to a generatrix of said cylindrical outer face engages behind said mounting panel; the improvement wherein said clamping part comprises a collar having a plurality of strip springs extending axially along said outer face and terminating at ends at least most of which have oblique edges which are located at different axial positions along said outer face, said strip springs being twisted such that one side edge of a strip spring extends substantially parallel to a generatrix of said cylindrical outer face and the other side edge of said strip spring is displaced outwardly away from said outer face, and said strip springs being arranged in groups with the axial lengths of said strip springs in each group successively decreasing around said outer face.

4,448,377

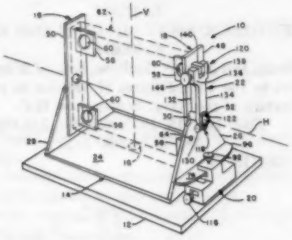
MOUNTING ARRANGEMENT FOR AN INERTIAL MEASUREMENT UNIT

Kurt D. Shinkle, Germantown, Tenn., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 19, 1982, Ser. No. 379,806

Int. Cl.³ F16M *11/04*

U.S. Cl. 248—178 **6 Claims**



1. In mounting arrangement for an instrument, such as an inertial measurement unit or the like, including a first frame for supporting said instrument, a second frame mounting said first frame and therewith said instrument for movement about a first axis, and a platform mounting said second frame and therewith said first frame and instrument for movement about a second axis extending in generally orthogonal relationship to said first axis, the improvement comprising:

(a) a first lock and motion assembly interconnecting said second frame and platform, said first assembly including

(i) first means for locking said second frame to said platform and

(ii) first means for movably adjusting the angular position of said second frame relative to said platform about said second axis while said second frame is locked to said platform by said first locking means; and

(b) a second lock and motion assembly interconnecting said first and second frames, said second assembly including

(i) second means for locking said first frame to said second frame and

(ii) second means for movably adjusting the angular position of said first frame relative to said second frame about said first axis while said first frame is locked to said second frame by said second locking means.

4,448,378

MODULAR SUPPORTING STRUCTURE FOR TABLES, SMALL TABLES, CHAIRS AND THE LIKE

Francesco Binfaré, Monza, Italy, assignor to C.D. & C Centro Design & Communicazione S.r.l., Milan, Italy

Filed Dec. 2, 1981, Ser. No. 326,481

Claims priority, application Italy, Dec. 19, 1980, 23690/80[U]

Int. Cl.³ A47B *91/00*

U.S. Cl. 248—188.7 **4 Claims**

1. A modular furniture support structure, comprising: a substantially vertically extending tubular column member;

a first set of angularly spaced radially extending arm members lying in a first plane at an upper end of said column member;

means for connecting said first set of arm members to said column member at said upper end of said column member;

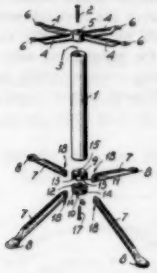
a second set of radially extending arm members lying in a second plane at the lower end of said column members; and

second means connecting said second set of arm members to said column member at said lower end thereof, at least one of said connecting means including:

a pair of clamping bodies each formed with a plurality of angularly spaced radially and axially open recesses

registering with the recesses of the other body for receiving the respective arm members and clamping them between said bodies, each arm clamped between said bodies being tubular and having an extremity received in two registering recesses of said bodies,

a screw traversing said bodies and anchored in said column member for drawing said bodies together to clamp



said ends of the respective set of arm members removably between said bodies, and

each of said ends is formed with a pair of cylindrical projections each provided with a circumferential groove and each of said recesses is cylindrical and said bodies are provided with pins extending radially into said recesses for engagement in said groove.

4,448,379

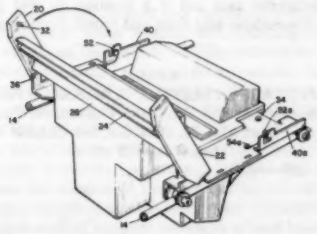
LIGHT SOURCE MOUNTING BRACKET FOR A FACSIMILE DOCUMENT SCANNER

Raymond W. DeMuth, Carpentersville, Ill., assignor to Teletype Corporation, Skokie, Ill.

Filed Apr. 15, 1982, Ser. No. 368,617

Int. Cl.³ F16M *11/00*

U.S. Cl. 248—201 **7 Claims**



1. A light source mounting bracket (18) particularly adapted for use with a facsimile document scanner having a scanning mechanism (16) movable along a predetermined path comprising:

a pair of parallel, spaced apart, end plates (20, 22) between which the light source (24) is positioned, each end plate having an outer surface and an inner facing surface,

means for maintaining said end plates (20, 22) in spaced apart parallel relationship,

a pair of coaxial hinge pins (30, 30*a*) each of which projects from one of the facing surfaces at each of the end plates (20, 22),

a pair of spatially positioned hinge plates (36, 36*a*) each of which is secured to the scanning mechanism (16) and each providing a support for one of the hinge pins (30, 30*a*) thereby providing a hinge for movement of the mounting bracket (18) between an operating position and a service position,

a release mechanism mounted upon said scanning mechanism (16) and cooperating with said end plates (20, 22) for releasably retaining said mounting bracket (18) in said operating position, and wherein said release mechanism includes a pair of coaxially oriented lock pins (32, 32*a*) each of which projects from one of the surfaces of each of the end plates (20, 22) and a pair of spatially positioned lock plates (40, 40*a*) each of which is secured to said scanning assembly (16) and said release mechanism includes means (50, 50*a*) for engaging and selectively releasing the lock pins (32, 32*a*) from their respective lock plates (40, 40*a*).

4,448,380

FOLDABLE CANTILEVER

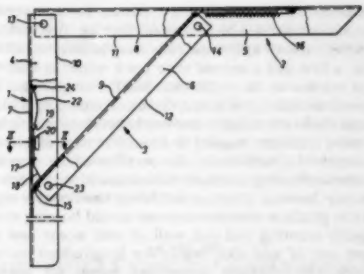
Rudolf Huber-Krattiger, Hofgut Bolzenried, 2216 Bubendorf, Switzerland

Filed Dec. 3, 1981, Ser. No. 327,182

Claims priority, application Switzerland, Dec. 3, 1980, 8947/80

Int. Cl.³ E04G *3/08*

U.S. Cl. 248—235 **17 Claims**



1. A foldable cantilever comprising a first U-profile section defined by a web and two legs with said two legs being at right angles to said web, a second U-profile section defined by a web and two legs with said last-mentioned two legs being at right angles to said last-mentioned web, a third U-profile section defined by a web and two legs with said last-mentioned two legs being at right angles to said last-mentioned web, said third U-profile section extending between said first and second U-profile sections, first means for pivotally connecting adjacent ends of said first and second U-profile sections to each other, second means for pivotally connecting an end of said third U-profile section to said second U-profile section, said U-profile sections being so dimensioned as to effect the receipt of said third U-profile section within the legs of said second U-profile section and the receipt of said second U-profile section within the legs of said first U-profile section, said first U-profile section web having a supporting flap projecting obliquely between the two legs thereof, said third U-profile section having an end remote from said second pivotally connecting means in engagement with said flap to maintain said first and second U-profile sections disposed in transverse relationship to each other, a tension spring having opposite ends, and one end of said tension spring being connected to said second U-profile section and another end of said tension spring being connected to said third U-profile section such that the tension of said tension spring biases said third U-profile section remote end between said first U-profile section legs.

4,448,381

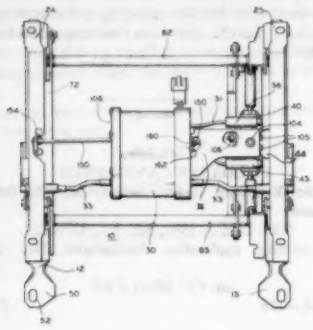
MOTOR MOUNT STRUCTURE FOR VEHICLE SEAT ADJUSTMENT APPARATUS

Dennis J. Anspaugh, Osseo, and Ronald R. Siegrist, Jackson, both of Mich., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Continuation of Ser. No. 111,598, Jan. 14, 1980. This application Mar. 10, 1982, Ser. No. 356,849

Int. Cl.³ A45D *19/04*

U.S. Cl. 248—394 **3 Claims**



1. A motor vibration reducing apparatus for a power adjusting mechanism for a vehicle seat, comprising: first and second transversely spaced apart base rails arrayed fore and aft in said vehicle, a first and a second slide track with the slide tracks tracked relative to the respective rails for longitudinal driven movement therealong, a motor drive unit including a plurality of output shafts extending transversely between said rails, slide track drive members coupled to respective ones of said output shafts for driving said tracks on operation of the motor drive unit, a motor housing structure enclosing said motor drive unit, said motor housing structure including transversely opposed end walls, platform structure secured to said housing structure for rigidly securing one end wall of said motor unit to the adjacent one of said slide tracks for longitudinal movement therewith, the invention comprising means for preventing undue longitudinal vibration of the motor unit comprising a rigid elongated rod laterally extending through the housing structure of the motor drive unit and engaged with the other of said slide tracks, and means affixing one end of said rod firmly adjacent said one end wall, said rod extending through the other end wall and extending to drop-in engagement with the other of said slide tracks transversely adjacent said motor unit to stabilize said motor unit.

4,448,382

POWER OPERATED CHAIR LIFT MECHANISM

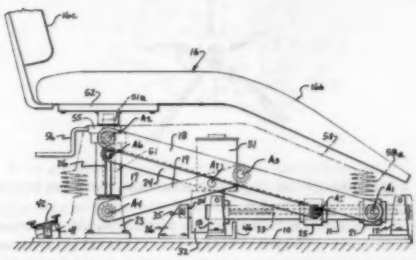
Robert R. Melone, Rockford, Ill., assignor to Smith Investment Company, Rockford, Ill.

Filed Aug. 16, 1982, Ser. No. 408,439

Int. Cl.³ F16M *13/00*

U.S. Cl. 248—421 **14 Claims**

1. A power operated chair lift mechanism comprising, a base having horizontal linear guide means thereon, a chair support, a first follower means mounted on the horizontal linear guide means for horizontal movement relative to the base, first link means, means connecting one end of the first link means to said first follower means for movement therewith and for pivotal movement relative thereto about a first horizontal axis, means connecting the other end of the first link means to the chair support for pivotal movement relative thereto about a second horizontal axis, a second link means, means connecting one end of the second link means to the first link means at a location intermediate the first and second horizontal axes for pivotal movement relative thereto about a third horizontal axis, means pivotally connecting the other end of the second link means to the base for pivotal movement relative thereto about a fourth horizontal axis at a fixed location, the spacing between the third and fourth horizontal axes along the second link means being equal to the spacing between the first and third horizontal axes along the first link means, means engaging said chair support for maintaining the chair support in a fixed attitude relative to the horizontal as the chair support is moved vertically, and power operated means connected to said first follower means for moving the first follower means along the horizontal linear guide means to raise and lower the chair support, said means for maintaining said chair support in a fixed attitude including, vertical guide means on the chair support, a second follower means on said horizontal linear



guide means, a third follower means mounted on the vertical guide means for vertical movement relative to the chair support, a third link means shorter than said first link means, means connecting one end of said third link means to said second follower means for movement therewith and for pivotal movement relative thereto about a fifth horizontal axis, means connecting the other end of said third link means to said third follower means for movement therewith and for pivotal movement about a sixth horizontal axis, and means pivotally connecting said second link means to said third link means for relative pivotal movement about a seventh horizontal axis at a location on said third link means intermediate said fifth and sixth horizontal axes and at a location on said second link means intermediate said third and fourth horizontal axes.

4,448,383

ADJUSTABLE TELEPHONE MESSAGE HOLDER

Robert S. Hansen, P.O. Box 1040, Doylestown, Pa. 18901

Filed May 28, 1982, Ser. No. 383,286

Int. Cl.³ A47B *19/00*

U.S. Cl. 248—447.1 **8 Claims**

1. In a message holder for use with a telephone instrument: a base of substantially smaller lateral extent than the telephone instrument mounted in a stationary position on the telephone

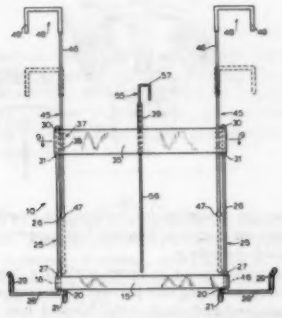
instrument and having a generally planar flange projecting therefrom, an elongated message holding arm hingedly connected to the base for pivotal movement about an axis generally perpendicular to the flange, and detent means carried by the flange for selectively retaining the message holding arm in a plurality of different angular positions relative to the base, wherein the detent means comprises a plurality of notches formed in the flange and spaced along an arcuate path centered about the hinge axis for engagement with an edge portion of the arm.

4,448,384

ADJUSTABLE MUSIC/BOOK HOLDER

Larry L. Jones, Jr., 206 S. Collins St., Nashville, N.C. 27856, and Star D. Cockrell, 1315 Beal St., Rocky Mount, N.C. 27801

Filed Dec. 20, 1982, Ser. No. 451,486
Int. Cl.³ G10G *5/00*
U.S. Cl. 248—443 **6 Claims**



1. An adjustable music/book holder comprising:

(a) a lower, elongated, transverse, metal, frame member formed of a bar material and in such manner as to establish a predetermined weight effect to help maintain the holder positioned in use;

(b) a pair of metal rod-formed foot members formed integral with said lower frame member and extending vertically downward from the bottom and outer extremities thereof;

(c) an upper elongated transverse frame member formed of metal sheet material and fixedly positioned above and having its longitudinal axis parallel to the longitudinal axis of said lower frame member;

(d) a first pair of metal rod-formed page holders, each having an upper vertically positioned straight rod portion mounted for rotation in an outer end portion of each of said frame members and having a lower U-shaped portion swingable around an outer extremity of said lower frame member and being adapted for holding book or music pages therein;

(e) stop means operatively associated with said first page holder upper rod portions for limiting axial movement thereof relative to said frame members;

(f) a second pair of metal rod-formed hook/alternate page holders, each having a lower vertically positioned straight rod portion mounted for rotation in said upper frame member at the outer ends thereof and having an upper inverted U-shaped portion adapted for alternately holding book or music pages or structural surfaces against which said holder resides, the axes of said lower, straight rod portions of said second pair of hook/alternate page holders being parallel to the axes of said upper rod portions of said first pair of page holders;

(g) a sleeve member vertically positioned and integrally secured centrally and on said upper frame member with its longitudinal axis parallel to the axis of said first and second page holder rod portions; and

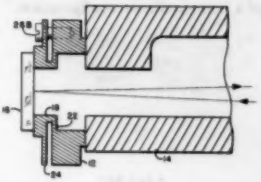
(h) a support device having a lower metal rod-formed portion removably mounted, slidable and rotatable in said sleeve member and an upper metal rod-formed portion shaped to grasp a selected portion of a book, support surface, or the like.

4,448,385

STABLE ALIGNMENT MECHANISM FOR LASER MIRRORS

Robert J. Matthys, Minneapolis, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed May 12, 1981, Ser. No. 262,736
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—476 **7 Claims**



1. A stable alignment mechanism comprising in combination;

a base,

a support for supporting an optical element having

a surface which is to be aligned with respect to a predetermined axis,

a flange secured to said support,

an adjusting screw engaging said flange and said base,

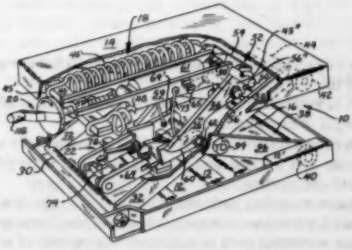
a resilient diaphragm coupling said base to said support and integral therewith, said diaphragm oriented to bend in a direction generally parallel to said axis of alignment in response to rotation of said screw whereby said support moves relative to said base.

4,448,386

LOW PROFILE RESILIENT SUSPENSION FOR VEHICLE SEAT

David Moorhouse, Towcester, and David E. Marshall, Bugbrooke, both of England, assignors to UOP Inc., Des Plaines, Ill.

Filed Dec. 1, 1981, Ser. No. 326,300
Int. Cl.³ B60N *1/02*
U.S. Cl. 248—564 **10 Claims**



1. In a resilient suspension system for a vehicle seat including a seat suspension base support, a vertically movable seat suspension upper support, a linkage system on each side of the seat which is connected to the seat suspension base support and to the seat suspension upper support for guiding and permitting generally vertical movement of the upper support relative to the base support, and spring means and damper means for

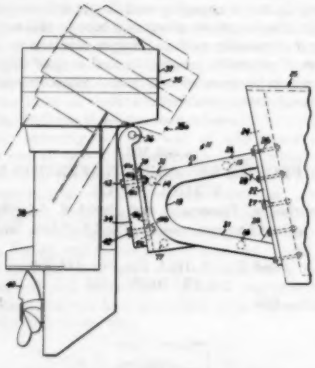
yieldingly resisting upward and downward movement of the upper support, the improvement comprising adjustable mounting means on one of said supports attached to one portion of said spring means for permitting the tension of said spring means to be selectively varied to accommodate occupants of varying weights, means on said one of said supports for pivotally mounting at least one elongated bellcrank lever having a short leg portion and a long leg portion, means at the end of the short leg portion of said at least one elongated bellcrank lever for mounting a second portion of said spring means, cooperating cam and cam follower means, one of which is located on the long leg portion of said at least one elongated bellcrank lever and the other of which is located on the other of said supports for causing the means for mounting the second portion of the spring means to move relative to the means for mounting the first portion of the spring means as said supports move vertically toward or away from each other, said cam means being of a non-rectilinear configuration.

4,448,387

OUTBOARD MOTOR SUPPORT BRACKET

James C. Gilbreath, 26225 Big Pines Hwy., P.O. Box 304, Wrightwood, Calif. 92397

Filed Sep. 13, 1982, Ser. No. 417,389
Int. Cl.³ F16M *1/00*
U.S. Cl. 248—642 **5 Claims**



1. A one piece outboard motor support bracket comprising a pair of tubular frame members,

each of said frame members being at least substantially cylindrical in cross-section,

each of said frame members forming a substantially semi-circular end portion and two leg portions diverging from said end portion,

transom mounting pads integrally united to the free ends of said leg portions of respective ones of said frame members,

motor mounting pads adjacent respective ones of said semi-circular end portions of respective ones of said frame members,

said motor mounting pads extending substantially parallel to said transon mounting pads,

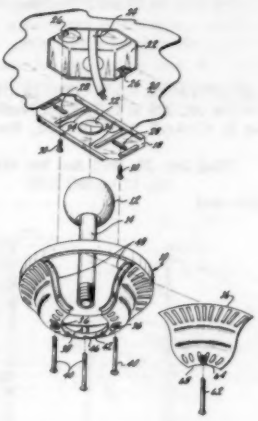
gusset plates united between said motor mounting pads and said respective semi-circular end portions, and strut means for maintaining said frame members in fixed spaced apart relation.

4,448,388

CANOPY ASSEMBLY

Warren E. Dennis, Pasadena, and Eric D. Plambeck, South Pasadena, both of Calif., assignors to Casablanca Fan Company, Inc., City of Industry, Calif.

Filed Mar. 20, 1981, Ser. No. 245,987
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—663 **17 Claims**



1. A canopy assembly for hanging an overhead electrical fixture from an electrical housing box supported on an overhead surface, including:

a main canopy having an upper portion, a lower portion and an interconnecting side portion, the upper portion adapted to surround and enclose the housing box and the lower portion including a symmetrical opening having a particular size and configuration and the side portion including an access opening extending into the symmetrical opening,

first means included in the main canopy for providing for a mechanical attachment of the main canopy to the housing box,

a ball member for coupling to the electrical fixture for supporting the electrical fixture, the ball member having an outer configuration matching the configuration of the symmetrical opening and having a size greater than the particular size of the symmetrical opening,

the ball member being provided with dimensions for insertion through the access opening into the main canopy to be captured and supported by the symmetrical opening to have the electrical fixture hang below the main canopy,

a cover plate having the same configuration as the access opening for covering the access opening after the ball member is inserted through the access opening, and

second means included in the cover plate for providing for a mechanical attachment of the cover plate to the housing box.

4,448,389

OPERATING DEVICE FOR A CYLINDRICAL GATE

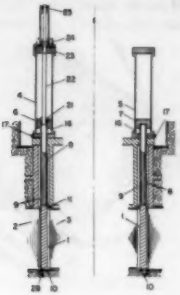
Paul Hudon, 9100 de Charente, Tracy, Canada

Filed Feb. 16, 1982, Ser. No. 349,317
Claims priority, application Canada, Mar. 12, 1981, 372843
Int. Cl.³ F16K *31/163*
U.S. Cl. 251—62 **17 Claims**

1. A safety device to protect a hydraulic turbo-machine equipped with a hydraulic conduit, including:

a self-closing cylindrical gate which blocks, when closed, the hydraulic conduit, said cylindrical gate having an upstream face and a downstream face, an upper edge and

a bottom lip; and a chamber receiving the gate in open position, said chamber comprising an upstream orifice defined by an opening between said upstream face of said gate and a stationary part of said chamber and a downstream orifice defined by another opening between said



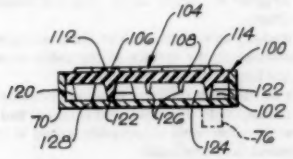
downstream face of said gate and another stationary part of said chamber, each said orifice having a selected discharge coefficient and cross-sectioned area such that, when said chamber is filled with liquid a force will be exerted on the upper edge of said gate to move said gate to close the hydraulic conduit.

4,448,390

VACUUM CONTROL VALVE FOR AUTOMOTIVE HEATING AND AIRCONDITIONING SYSTEMS

Raymond T. Halstead, Wheeling, and Charles E. Black, III, Mount Prospect, both of Ill., assignors to Indak Manufacturing Corp., Northbrook, Ill.

Continuation of Ser. No. 237,995, Feb. 25, 1981. This application Jan. 3, 1983, Ser. No. 455,200
Int. Cl.³ F16K *25/00*
U.S. Cl. 251—176 **7 Claims**



1. A vacuum control valve, comprising

a body having a valve surface with a plurality of valve ports extending through said body from said surface,

a soft resilient valve member having a control surface slidable along said valve surface and formed with passage means for selectively establishing communication with said valve ports,

a movable carriage for receiving and supporting said valve member,

and means for moving said carriage along a predetermined path substantially parallel with said valve surface,

said soft resilient valve member having a soft resilient compressible rear portion formed integrally with said valve member on the opposite side thereof from said control surface,

said soft resilient valve member being confined between said carriage and said valve surface with said soft resilient compressible rear portion in a compressed condition for exerting resilient pressure between said control surface of said valve member and said valve surface of said body,

said soft resilient compressible rear portion comprising a pattern of fins on said valve member and alternating with recesses therein to afford resilient compressibility,

said fins projecting from said valve member toward said carriage and engaging said carriage,

said carriage being formed with a pattern of shallow grooves for receiving and stabilizing the rear portions of said fins,

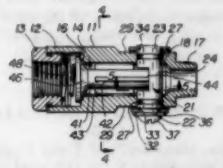
the depth of said grooves being small in comparison with the depth of said fins.

4,448,391

SQUEEZE GRIP VALVE

Richard E. Young, 625 Coney Island Dr., Sparks, Nev. 89431

Filed Apr. 4, 1983, Ser. No. 481,790
Int. Cl.³ F16K *31/44*
U.S. Cl. 251—263 **2 Claims**



1. A valve comprising a body having intersecting longitudinal and transverse bores, said longitudinal bore being formed with an inlet port at one end, a seat inward of said inlet port, a cylindrical reduced diameter portion inward of said seat and an outlet port on other end of said body, a stem in said transverse bore, a handle external to said body movable by squeezing action between a first position at an angle to the exterior of said body and a second position substantially parallel to said body, stem turning means for turning said stem as said handle moves from first and second positions, a portion of said stem being formed at the intersection of said bores in a cam, said cam portion of said stem being initially circular in cross-section and being cut away through approximately 270° to form said cam as a sector of a circle of about 90°, an actuator reciprocable in said longitudinal bore having a seat-engaging means at one end engageable with said seat to close said valve, a cam follower at the opposite end of said actuator to engage said cam, said cam follower in the closed position of the valve engaging a radial side of said sector, said cam follower in the open position of the valve engaging a peripheral corner of said sector, a substantial portion of said stem being cut away to form said cam, the cut-away portion permitting fluid flow around said cam when the valve is open, said actuator being substantially smaller than said reduced diameter portion and having spacing means intermediate said ends comprising vanes engaging the walls of said reduced diameter portion permitting fluid flow between said actuator and said reduced diameter portion, said cam forcing said actuator toward said inlet port to move said seat engaging means off said seat to open said valve when said handle is in second position, and spring means biasing said actuator to close said valve.

4,448,392

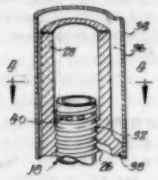
THREAD STOP FOR A SCREW JACK

Bernard F. Ladewski, St. Joseph, Mich., assignor to Auto Specialties Manufacturing Company, St. Joseph, Mich.

Filed Jan. 25, 1982, Ser. No. 342,070
Int. Cl.³ B66F *3/18*
U.S. Cl. 254—103 **8 Claims**

1. A thread stop for a screw jack including at least one elongated, substantially cylindrical hollow metal screw member having an external thread, said thread stop comprising: metal screw member material being deformed radially outwardly from the hollow screw member interior in a predetermined portion of a minor diameter of said external thread, said

at least one deformed metal formation being formed by a ductile movement of screw member material and having substantially the same hardness as said screw member, the deformed



metal formation comprising a pair of nibs each having a substantially continuous, curved radially outer surface and being substantially symmetrical one with the other about a predetermined point in said minor thread diameter.

4,448,393

APPARATUS FOR PULLING IN AND LETTING OUT A CABLE

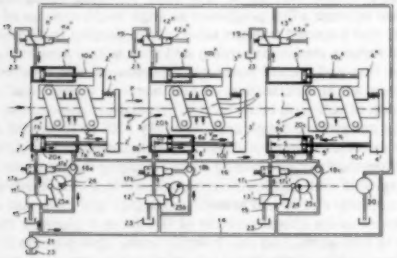
Willy Habegger, Hünibach, and Ernst Lauber, Thun, both of Switzerland, assignors to Willy Habegger AG, Thun, Switzerland

Filed Mar. 26, 1982, Ser. No. 362,120

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1981, 3112344

Int. Cl.³ B66D *3/18*

U.S. Cl. 254—264 **12 Claims**



1. An apparatus for pulling in and letting out a flexible element such as a cable, said apparatus comprising:

a generally stationary housing defining a cable path;

a predetermined number N equal to at least three of grippers spaced in a row and shiftable along said path, said grippers being clampable on said element in said path;

respective actuator means connected to said grippers for shifting same parallel to said path in a pulling direction and in an opposite letting-out direction; and

control means responsive to gripper position and connected to said actuator means for

(a) clamping all but one of said grippers on said element and unclamping said one gripper from said element,

(b) displacing the clamping grippers with said element in one direction at a rate V_w through a distance $S/(N-1)$ while simultaneously displacing the nonclamping gripper oppositely through a distance S along said element at a rate V_r equal substantially to $2 \cdot V_w$ to return the nonclamping gripper to a starting position; and

(c) thereafter clamping said nonclamping gripper on said element and unclamping the one of the other grippers which follows the gripper in said starting position in said row and sequentially repeating steps (b) and (c), whereby said grippers are successively returned to said starting position in an operation cycle having N parts.

4,448,394

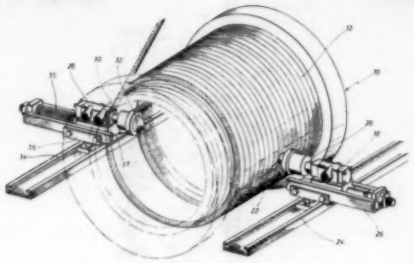
HIGH LOW SAFETY APPARATUS FOR DRILLING RIGS

Joseph L. LeMoine, Houston, Tex., assignor to Koomey, Inc., Brookshire, Tex.

Filed Sep. 30, 1982, Ser. No. 432,052

Int. Cl.³ B66B *5/08*; B66D *1/56*

U.S. Cl. 254—271 **1 Claim**



1. In a safety apparatus for raising and lowering a traveling block of a drilling rig by a cable on a cable drum actuated by a primer mover which is controlled by a brake and clutch, the improvement in means for preventing the traveling block from being raised above a predetermined high position and from being lowered below a predetermined low position comprising,

a high position limiting valve having an air inlet and an air outlet, said valve having a stem normally positioned spaced from the cable drum for actuation and providing communication between the inlet and the outlet when a predetermined amount of cable is spooled onto the drum,

a low position limiting valve having an air inlet and an air outlet, said valve having a stem positioned contacting the cable on the drum for actuation and providing communication between the inlet and the outlet when a predetermined amount of cable is spooled off of the drum,

an air supply connected to the inlets of the high position valve and the low position valve,

the outlets of the high position valve and the low position valve adapted to supply air to stop the actuation of the cable drum,

the longitudinal axis of the valves are positioned generally perpendicular to the surface of the cable drum and their stems are longitudinally movable, and

said stem of the high position valve is normally positioned out of contact with the cable until actuated and the stem of the low position valve is yieldably urged at all time into engagement with the cable.

4,448,395

IMPROVEMENTS IN AND RELATING TO WINCHES

William C. Purdy, Barnehurst, England, assignor to Sykes Pumps Limited, London, England

Filed Jan. 18, 1982, Ser. No. 340,037

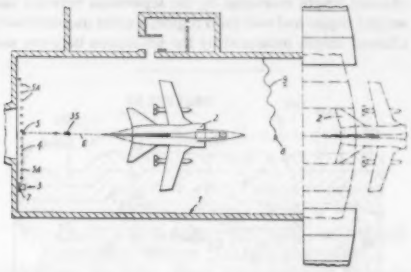
Claims priority, application United Kingdom, Jan. 29, 1981, 8102735

Int. Cl.³ B66D *1/46, 1/50, 1/56, 1/58*

U.S. Cl. 254—334 **7 Claims**

1. A winch arrangement comprising a drive motor; a winch drum assembly coupled to said drive motor by means of a transmission incorporating a reduction gear, said transmission including a component of relatively high inertia, whereby in the event of sudden cease of drive from the drive motor the transmission can run on to drive the winch drum assembly and take up possible slack in the winch rope; rope guide means for guiding rope from a load to the winch drum along an indirect path; and shock absorbing buffer means associated with said rope guide means and arranged, upon sudden increase in the load in the winch rope above a predetermined limit, to allow deflection of the winch rope and to absorb the load placed on

the rope due to the inertia of the system; said transmission including a non-return device arranged to prevent the winch drum from rotating in the reverse direction under the load placed on the winch rope, following stoppage of the transmission, and the said transmission incorporates a releasable clutch means to enable manual unreeling of the winch rope prior to operation of the winch, said clutch means comprising an electromagnetically actuatable clutch, the said winch drum is



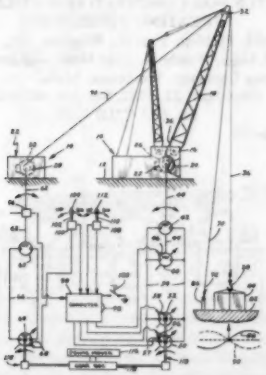
provided with an electromagnetically actuatable braking means, and there is further provided a manually operable control circuit incorporating an actuating switch for controlling release of said clutch means, and a timing circuit for controlling release of said brake means, the said timing circuit being arranged to delay release of said brake means following release of said clutch means so that the said brake means remains applied for a predetermined period of time sufficient to permit relaxation of tension in the winch rope.

4,448,396

HEAVE MOTION COMPENSATION APPARATUS

Pierre C. Delago, Afton, Minn., assignor to American Hoist & Derrick Company, St. Paul, Minn.

Filed Feb. 25, 1982, Ser. No. 352,082
Int. Cl.³ B66D *1/48*
U.S. Cl. 254—340 **15 Claims**



1. Heave motion compensation apparatus for use with a crane for transporting a load between twio platforms moving vertically with respect to each other with a cyclical movement, said apparatus including:

A. a crane boom mounted on a first of said platforms and having a boom point above and in vertical clearing relation to a load on a second of said platforms,

B. a main hoist drum mounted on said first platform;

C. a main load line operably mounted on said main hoist drum and having an outer end portion extending over the boom point and terminating in an outer end;

D. load line fastening means for attaching said outer end of said main load line to said load when said load is situated on said second platform;

E. power means;

F. first sensor means operable to develop a first signal representative of the speed and direction of movement of the two platforms toward and away from each other;

G. second sensor means operable to develop a second signal representative of the rate of change of the speed of movement of the platforms toward each other;

H. lifting means including the power means operative to rotate the main hoist drum to cause the load line to lift the load from the second platform; and

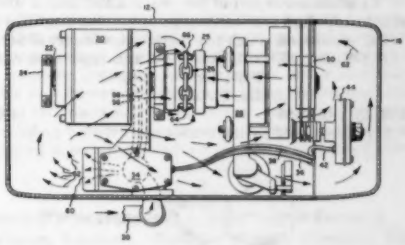
I. pick-off control means operable to activate said lifting means responsive to the simultaneous presence of a first signal representative of movement of the platforms toward each other and of a second signal representative of a zero rate of change of speed of such movement of the platforms toward each other.

4,448,397

PNEUMATIC POWERED HOIST

Robert H. Broyden, Williamsville, N.Y., assignor to Columbus McKinnon Corporation, Amherst, N.Y.

Filed Nov. 12, 1982, Ser. No. 440,850
Int. Cl.³ B66D *3/20, 3/26*
U.S. Cl. 254—360 **6 Claims**



1. A compressed air powered hoist comprising a casing housing the parts of the hoist mechanism including the hoist motor;

said casing being pneumatically sealed except for having close-clearance load carrying means guide openings therethrough; said hoist motor being so arranged within said casing that the exhaust vapors from said hoist motor are discharged into the interior of said casing while expanding and cooling the mechanisms enclosed within said casing;

said vapors finally exiting through said guide openings while further expanding and cooling the load carrying means occupying said guide openings and attenuating and eliminating the high decibel acoustic vibrations issuing initially from the motor exhaust ports.

4,448,398

WINCH CONTROL SYSTEM

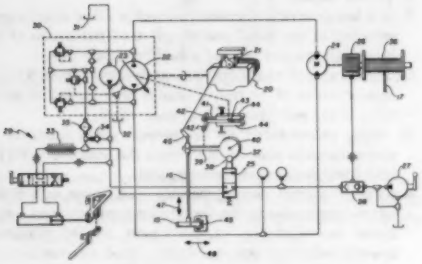
Lloyd A. Wyatt, Elk River, Minn., assignor to Garlock Equipment Company, Plymouth, Minn.

Filed Mar. 1, 1982, Ser. No. 353,018
Int. Cl.³ B66D *1/44, 1/48*
U.S. Cl. 254—361 **14 Claims**

1. In a crane of the type having a winch including a rotatable spool, an improved winch control system which comprises:

motor means connected for rotating said spool; dual state

brake means connected for preventing spool rotation in one state and permitting spool rotation in the other state;
power means including means for providing driving energy for said motor means and means providing state changing energy for said brake means; and



control means including first means for selectively interconnecting said brake means and said state changing energy providing means and second means responsive to said first means for selectively providing said driving energy to said motor means.

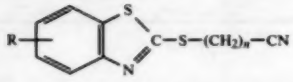
4,448,399

BENZTHIAZOLYL-2-THIOALKANOIC NITRILES

John J. D'Amico, Los Angeles, Calif., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 212,389, Dec. 3, 1980, abandoned, which is a continuation of Ser. No. 120,436, Feb. 11, 1980, abandoned, which is a continuation-in-part of Ser. No. 915,846, Jun. 15, 1978, abandoned. This application Apr. 16, 1981, Ser. No. 254,812
Int. Cl.³ C07D *277/74*
U.S. Cl. 548—165 **6 Claims**

1. A compound having the formula:



wherein R is hydrogen, halogen, or alkyl having 1 to 5 carbon atoms; n is equal to 1, 3, 4, 5, or 6.

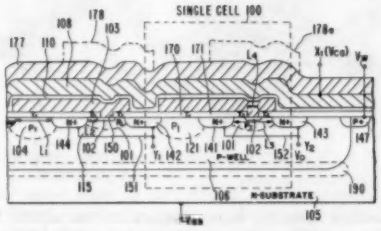
4,448,400

HIGHLY SCALABLE DYNAMIC RAM CELL WITH SELF-SIGNAL AMPLIFICATION

Eliyahou Harari, 2320 Friars La., Los Altos, Calif. 94022

Continuation-in-part of Ser. No. 282,882, Jul. 13, 1981, Pat. No. 4,417,325. This application Mar. 8, 1982, Ser. No. 355,986
Int. Cl.³ G11C *11/40, 11/56*
U.S. Cl. 365—185 **27 Claims**

1. A memory cell comprising:
a substrate of a first conductivity type;
a first region of second conductivity type formed in said substrate, said second conductivity type being opposite to said first conductivity type;
second, third, and fourth regions of said first conductivity type formed in said first region of said second conductivity type, said second and third regions being separated by a first portion of said first region and said third and fourth regions being separated by a second portion of said first region;
a fifth region of said first conductivity type formed in said second portion of said first region;
a first electrode attached to said fifth region, said first electrode being electrically isolated from said second, third, and fourth regions, said first electrode extending on insulation over said first portion to said second region and also extending over said third region and a part of said second portion, said first electrode being covered by second insulation;
a word line formed over said second insulation so as to overlie said first electrode and said second portion between said third region and said fifth region, said first electrode and said word line forming a dual electrode, said dual electrode structure forming a read transistor with channel length measured by the separation between said second region and said third region, a write transistor with channel length measured by the separation between said



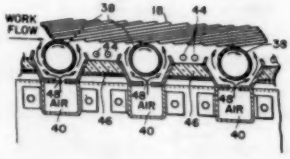
third region and said fifth region, and a storage junction formed between said fifth region and said first region;
wherein the conductivity state of the channel region of said write transistor with channel length measured by the separation between said third region and said fifth region is controlled entirely by said word line which has a portion thereof extending over said second portion of said first region extending between said third region and said fifth region and being separated from said second portion of said first region by insulation of approximately the same thickness as the insulation separating said first electrode from said first portion.

4,448,401

APPARATUS FOR COMBINED HOT ROLLING AND TREATING STEEL ROD

Asjed A. Jalil, Holden; Earl S. Winslow, Jr., Grafton, and Charles H. Gage, Westboro, all of Mass., assignors to Morgan Construction Company, Worcester, Mass.

Filed Nov. 22, 1982, Ser. No. 443,618
Int. Cl.³ C71D *9/56*
U.S. Cl. 266—78 **7 Claims**



1. Apparatus for rolling and treating steel rod comprising:
(a) a rod rolling mill,
(b) delivery means for receiving said rod from (a),
(c) a laying head for receiving said rod from (b), and forming said rod into a succession of relatively stationary rings,
(d) a conveyor for receiving said rings from (c),
(e) means for driving (d) whereby said rings become spread out on (d),
(f) a portion of (d) comprising spaced rollers,
(g) means for applying head to said rod generally from

above and a heating element between each pair of rollers to heat said rod from below, and

(h) air cooling means associate with each said roller in (f) for applying a jet of cooling air directly upwardly to the under surface of each said roller, whereby said cooling air flows around said rollers and impinges against the under surfaces of said rings.

4,448,402

APPARATUS FOR DIRECTLY MAKING LIQUID PIG-IRON FROM COARSE IRON ORE

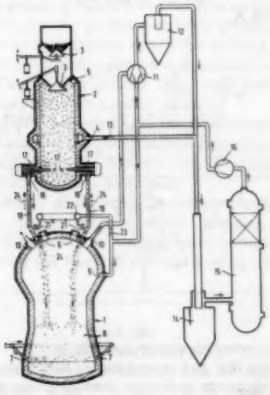
Ralph Weber, Sao Paulo, Brazil; Bernt Rollinger, Baden-Baden, Fed. Rep. of Germany; Rolf Hauk, Baden-Baden, Fed. Rep. of Germany; Michael Nagle, Baden-Baden, Fed. Rep. of Germany, and Bernhard Rinner, Kehl am Rhein, Fed. Rep. of Germany, assignors to Korf Engineering GmbH and Voest-Alpine AG, both of, Fed. Rep. of Germany

Division of Ser. No. 300,904, Sep. 10, 1981, Pat. No. 4,409,023. This application May 12, 1983, Ser. No. 494,096

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1980, 3034539

Int. Cl.³ F27B *1/20*

U.S. Cl. 266—183 **7 Claims**



1. Apparatus for transporting hot iron sponge from a direct-reduction shaft furnace to a smelter-gasifier disposed beneath the direct-reduction shaft furnace, comprising a pipe connecting the direct-reduction shaft furnace with the smelter-gasifier, a casing tube inserted into a wall opening of the direct-reduction shaft furnace, a liquid-cooled shaft journaled coaxially with said tube projecting into the interior of said direct-reduction shaft furnace, a screw conveyor constructed in the form of a helix carried by said liquid-cooled shaft, an outlet opening for the iron sponge connected with said pipe and located adjacent to one end of the screw conveyor, and a rotary drive for said liquid-cooled shaft, characterized in that the screw conveyor is constructed in the form of an interrupted helix formed by paddles.

4,448,403

POSITION DRIVE

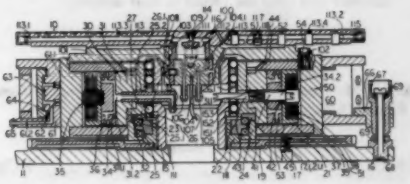
Eberhard Riessland, and Karl-Heinz Krüger, both of Dresden, German Democratic Rep., assignors to Veb Zentrum für Forschung und Technologie Mikroelekronik, Dresden, German Democratic Rep.

Filed Dec. 7, 1981, Ser. No. 328,092

Claims priority, application German Democratic Rep., Dec. 9, 1980, 225885

Int. Cl.³ B25B *11/00*

U.S. Cl. 269—21 **30 Claims**



1. A position drive for positioning a wafer containing integrated circuit components in a system for testing the integrated circuit components wherein the wafer is preliminarily positioned in X-Y coordinate directions, comprising a wafer-supporting member; a base plate; first means for displacement of said wafer-supporting member in a direction of an axis defined by Z coordinate between two stable positions; means for rotation of said wafer-supporting member about said axis; and second means for displacement of said wafer-supporting member in a direction of said axis, said second displacement means being adapted to displace said supporting member independently from said first displacement means, said first means for displacement of said wafer-supporting member between two stable positions including a lifting magnet and a uniformly rotatable slide frame surrounding said lifting magnet and connected to said wafer-supporting member, said means for rotation including a supporting ring surrounding said slide frame and adapted to actuate the uniform rotation of said slide frame.

4,448,404

DEVICE FOR HOLDING A SHEET-LIKE SAMPLE

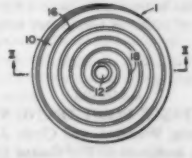
Koji Ogawa, Yokohama; Yoshihiko Ohtsuki, Chigasaki; Yoshihiko Kudo, Tokyo; Hideo Maeda, Hoya, and Naoto Kihara, Funabashi, all of Japan, assignors to Nippon Kogaku K. K., Tokyo, Japan

Continuation-in-part of Ser. No. 321,271, Nov. 13, 1981, abandoned. This application Jun. 2, 1983, Ser. No. 499,024

Claims priority, application Japan, Nov. 18, 1980, 55-162340; Jun. 15, 1982, 57-89444[U]

Int. Cl.³ B25B *11/00*

U.S. Cl. 269—21 **7 Claims**



1. A device for holding a sheet-like sample having a circular outline, comprising:

(a) table means including a reference surface capable of intimately contacting the surface of said sample, the reference surface having a width equal to or larger than the surface prescribed by said circular outline of said sample, and at least one groove formed in said reference surface

and open along its length at said reference surface so as to be capable of being covered by the surface of said sample during said intimate contact, said groove being formed in the shape of at least one continuous circular spiral extending toward the periphery of said reference surface and having its center substantially at the center of said reference surface, said sample being located so that the center of the sample is at the center of said reference surface; and

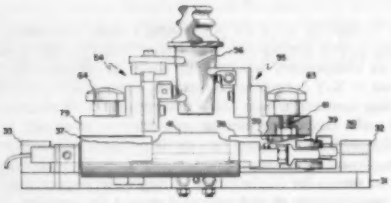
(b) exhaust means for exhausting the air in said groove covered by the surface of said sample at a position that is spaced from the center of said reference surface by a distance less than the radius of said sample.

4,448,405

VERSATILE GRIPPING DEVICE

Thomas M. Cipolla, Ballston Lake, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jul. 6, 1981, Ser. No. 280,605
Int. Cl.³ B25B *1/24*
U.S. Cl. 269—32 **6 Claims**



1. A gripping device which grasps a wide variety of objects comprising:

a pair of jaw assemblies each having at least one gripper jaw selected from a set of generic jaws which in different combinations are adapted to grasp objects of many sizes and shapes and inlude nose-shaped jaws primarily for concave and concave/convex surfaces, vee-shaped jaws primarily for convex surfaces, and multiple rest button jaws for flat surfaces;

an operating mechanism to which said jaw assemblies are removably and interchangeably attached and which has means for providing relative linear motion of said jaw assemblies between open and closed positions in response to actuation of a power source to grip an object in a monostable manner;

wherein every jaw assembly includes a mounting base and one or more brackets adjustably mounting at least one gripping jaw on said base; and

said nose-shaped jaws have a radius of curvature in two directions forming a contact area which has the shape of a section of a toroid, said vee-shaped jaws have two contact areas that intersect and are each a sector of a cylinder, and said multiple rest button jaws have a flat mounting plate with an array of holes in which are three spherical rest buttons.

4,448,406

WORKPIECE POSITIONING VISE

Frederick C. Hallberg, Wheaton, and Clyde J. Morgan, Oxon Hill, both of Md., assignors to The United States of America as represented by the Administrator, National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 31, 1982, Ser. No. 364,094
Int. Cl.³ B23Q *3/18*
U.S. Cl. 269—224 **13 Claims**

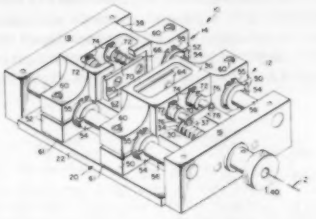
1. A workpiece positioning device comprising:

a rigid frame **(20)** having a rigid bed **(22, 24)** and end pieces **(16, 18)**;

a pair of assemblies **(12, 14)** disposed intermediate of said end pieces;

means **(26)** rotatably supported by said end pieces, engaging said pair of assemblies for simultaneously driving each of them in opposed reciprocation;

at least a pair of parallel cylindrical guides **(56, 58)** supported by said end pieces on opposite sides of said rotatably



supported means and maintaining said pair of assemblies spatially suspended above said cylindrical rigid bed;

means **(54)** interposed between said guides and said assemblies for providing rollable bearing surfaces there between; and

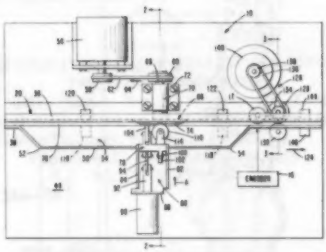
means **(46)** contacting said rotatably supported means and at least one of said end pieces for effecting a compressive force there between.

4,448,407

DUAL DIRECTIONAL DOCUMENT DRIVE APPARATUS

Anthony J. Bashford, Baden, and Elbert H. Vandenham, Waterloo, both of Canada, assignors to NCR Corporation, Dayton, Ohio

Filed Dec. 28, 1981, Ser. No. 334,510
Int. Cl.³ B65H *9/16*
U.S. Cl. 271—8 A **5 Claims**



1. A sheet moving apparatus comprising:

a track having first and second spaced side walls and a third wall therebetween to form a sheet receiving space therebetween; and

means for moving a sheet towards said third wall and thereafter moving said sheet in a downstream direction along said track comprising:

a rotatable member having a surface positioned in said sheet receiving space and means enabling said rotatable member and its surface to be rotated;

a moveable member moveable between first and second positions with regard to said rotatable member;

said moveable member having a first member to cooperate with said surface of said rotatable member to move a sheet towards said third wall when said moveable member is in said first position and said rotatable member and its surface are rotated, and said moveable member also having a second member to cooperate with said surface of said

rotatable member to move said sheet in said downstream direction when said moveable member is in said second position and said rotatable member and its surface are rotated; and

drive means for moving said moveable member between said first and second positions.

4,448,408

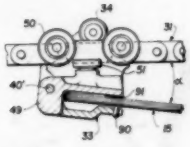
GRIPPER CLAMPS FOR CONVEYING PAPER SHEET PRODUCTS

Hans G. Faltin, York, Pa., assignor to Advance Enterprises, Inc., York, Pa.

Continuation-in-part of Ser. No. 271,032, Jun. 4, 1981. This application Dec. 22, 1981, Ser. No. 333,428

Int. Cl.³ b65H *5/02*

U.S. Cl. 271—277 **6 Claims**



1. A transport carriage for conveying newspapers or like paper products between processing stations with precision timing and orientation over a path defined by a track consisting of a single piece U-shaped channel having two inwardly disposed flanges at the mouth of the U adapted to receive and confine guide rollers riding thereinside, comprising in combination,

two jaw members pivoted about a common pivot axis and presenting gripping means with a friction surface disposed between the jaws for gripping between gripping edges on the two jaws and seating means for holding the paper products in alignment against a stop surface adjacent the axis for transport by pulling along said path with the leading paper edges in parallel position,

four guide rollers positioned with two rollers each on opposite sides of the carriage midpoint and coupled to one jaw for confinement inside of said U-shaped channel to ride thereinside and thereby said track,

and programmable pivot means for selectively opening and closing the jaws for entry, alignment, gripping and releasing the paper products for transport between selected stations along the track to pull the leading edges of the products.

4,448,409

CARTESIAN DIVING TOY

Takashi Kaga, and Nobuo Kobayashi, both of Tokyo, Japan, assignors to Tomy Kogyo Co., Inc., Tokyo, Japan

Filed Jun. 8, 1981, Ser. No. 271,206

Claims priority, application Japan, Jul. 23, 1980, 55-103154

Int. Cl.³ A63H *23/08*

U.S. Cl. 272—8 N **11 Claims**

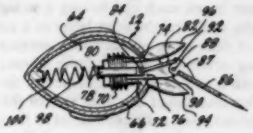
1. A toy Cartesian diver which comprises:

a diver housing;

an air chamber located in said housing, said air chamber having imperforate unitary walls, a section of said walls forming an essentially rigid outer shell, the remaining section of said walls formed as an elongated surface invaginated within said outer shell, at least a portion of said invaginated sections of said walls being permanently convoluted and capable of moving about its convolutions to elongate or shorten said invaginated section of said walls;

the volume of said chamber decreasing and increasing in response to elongation and shortening repeatedly of said invaginated section of said walls;

a propulsion means movably mounted on said housing and capable of moving with respect to said housing, said propulsion means connected to said invaginated section of said walls such that said propulsion means moves with respect to said housing in response to elongation and shortening of said walls;



said toy capable of being immersed in an essentially noncompressible liquid and in response to pressure increases in said liquid in said invaginated section of said walls elongating to decrease the volume of said chamber and in response to pressure decreases in said liquid said invaginated section of said walls shortening to increase the volume of said chamber, said toy moving in said liquid in response to movement of said propulsion means.

4,448,410

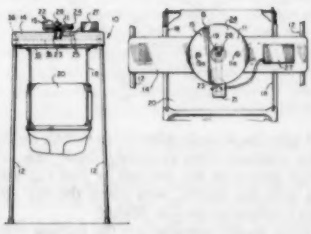
ELECTRICALLY-POWERED BABY SWING

Harold Kosoff, 22 Sycamore Dr., Burlington, N.J. 08016

Filed Aug. 10, 1981, Ser. No. 291,552

Int. Cl.³ A63G *9/16*; **A47D** *13/10*

U.S. Cl. 272—86 **26 Claims**



1. In a baby swing combination which includes horizontal pendulum axle means from which a seat is suspended, the combination comprising:

(a) weighted means adapted to be coupled to said axle means and capable of rotary movement in a generally horizontal plane, and

(b) non-rotating motor means coupled to said weighted means for causing said rotary movement of said weighted means whereupon said axle means is caused to have cyclical rotary movement about its axis thereby causing said seat to swing, said motor means being immobile relative to said weighted means.

4,448,411

MULTI-USE BALANCE BEAM APPARATUS

Michael S. Parker, P.O. Box 200, Sorrento, Me. 04677

Filed Jan. 12, 1983, Ser. No. 457,402

Int. Cl.³ A63G *1/32, 11/00*

U.S. Cl. 272—111 **15 Claims**

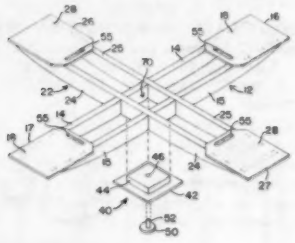
10. A multi-purpose recreational balance beam device comprising:

first balance beam comprising a pair of parallel spaced apart rails, each rail having a straight side and a curved side, the

straight sides of said rails lying in a common plane, said curved sides lying in a common surface of curvature for rocking action, a pair of flat platform seat members rigidly joining the pair of rails on the straight sides thereof in said parallel spaced apart configuration, each rail of the first balance beam having a pair of notches formed in the straight side thereof distributed on either side of the center of the rail and spaced apart a distance equal to the spacing of the rails from each other,

second balance beam comprising a second pair of parallel spaced apart rails, spaced apart the same distance as the first balance beam, each rail having a straight side and a curved side, said straight sides lying in a common plane, said curved sides lying in a common surface of curvature for rocking action, each rail of the second pair of rails formed with a pair of notches formed in the curved side, said notches distributed on either side of the center of the rail and spaced apart a distance equal to the spacing of the rails from each other, and a pair of flat platform seat members rigidly joining the pair of rails on the straight sides thereof in said parallel spaced apart relationship;

said notches formed so that the first and second balance beams may be assembled in interfitting relationship at right angles to each other defining a rectangle at the center of the interfitting balance beams, the straight sides of the rails of the respective balance beams lying in a common plane, said curve sides also being coincident at the intersections of the rails of the interfitting balance beams whereby the interfitting balance beams may be



placed with the straight sides down resting on the respective flat platform seats providing stable rails in two orthogonal directions for one rail or two rail walking, or placed with the curved sides down thereby affording a two way rocker or see-saw device;

locking piece means comprising a flat locking plate having projections means depending therefrom arranged to bear against the inner surfaces of the center rectangle formed by the interfitting balance beams, said locking piece constructed and arranged to be operatively inserted in said center rectangle with the flat locking plate bearing against the sides of the rails;

turning disc means and means for coupling said turning disc means to the flat locking plate of the locking piece when the locking piece is inserted into the center rectangle from below with the flat locking plate bearing against the coincident curved sides of the respective pairs of rails of the interfitting balance beams and with the curved sides of the balance beams facing downward, said turning disc affording a reduced bearing surface between the interfitting balance beams and the ground whereby said interfitting balance beams may be turned by users sitting on the platform seats and thereby function as a merry-go-round;

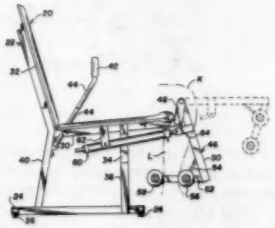
and a pair of guide plates, said guide plates spaced apart in parallel relationship and joined by a pair of guide bars, said guide bars constructed and arranged for operatively seating in the notches of the second balance beam having notches formed in the curved sides thereof so that the second balance beam may form a stable base with the platform seats facing the ground and the curved sides of the rails facing upward, said guide plates held adjacent to the outsides of the rails with the guide bars seated in the notches, and whereby said first balance beam may be positioned with the curve sides of the rails facing downward and abutting against the upward facing curved sides of the rails of the second balance beam thereby providing a see-saw for rocking the first balance beam on the second for enhanced vertical rocking action, the rails of said respective balance beams held in alignment on each other by said guide plates.

4,448,412

EXERCISING DEVICE WITH DOUBLE ACTING HYDRAULIC CYLINDER

Jerry D. Brentham, P.O. Box 599, Belton, Tex. 76513

Division of Ser. No. 12,874, Feb. 16, 1979, Pat. No. 4,291,787.
This application Jul. 20, 1981, Ser. No. 285,257
Int. Cl.³ A01B *23/04*
U.S. Cl. 272—130 **9 Claims**



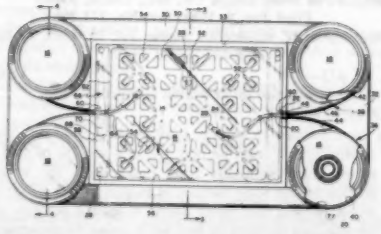
1. An exercising device, comprising: a frame; actuating means mounted with the frame for movement by a portion of a human body; a double acting cylinder connected to the frame for resisting movement of said actuating means, said cylinder including a container having first and second chambers for supporting a fluid disposed therein and a passageway for placing the first and second chambers in fluid communication with one another; control means for regulating the flow of fluid through said passageway, said control means having a plurality of orifices of varying sizes formed therein; and means to selectively position the orifices in communication with the passageway to control resistance to fluid flow to vary the magnitude of force required to move the actuating means.

4,448,413

AMUSEMENT GAME DEVICE

David Weindel, 106 Forge Rd., East Greenwich, R.I. 02818, and Carl Cederholm, Lincoln, R.I., assignors to David Weindel

Filed Feb. 3, 1983, Ser. No. 463,384
Int. Cl.³ A63F *7/00, 9/14*
U.S. Cl. 273—1 GB **14 Claims**

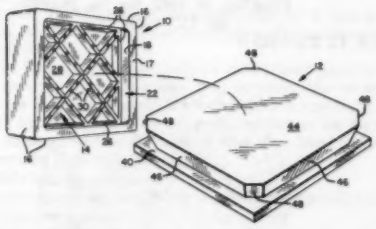


1. An amusement game device comprising:

a. a base;

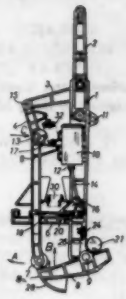
b. a game board on said base;
c. a game element on said board;
d. first and second resiliently flexible elongated strips having spaced inner and interconnected outer ends;
e. means attached to said base and communicating with said first and second strip inner ends for selectively longitudinally advancing and retracting said first and second strips on said board;
f. guide means engaging said first and second strips to maintain at least the outwardly advanced portions thereof in closely spaced relation so that substantially longitudinal advancement of the respective strips can be effected with the respective advancing and retracting means without substantial outward bulging of either of said strips, whereby said interconnected ends can be directed to engage said game element through the independent selective advancement and retraction of said strips.

4,448,414
BASEBALL BASE
Pete Gutierrez, 420 NW. Witham Dr., Corvallis, Oreg. 97330
Filed Mar. 25, 1982, Ser. No. 361,733
Int. Cl.³ A63B 71/00
U.S. Cl. 273—25 **5 Claims**



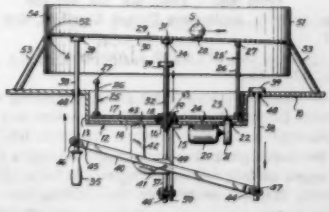
1. A baseball base comprising:
anchor means adapted for positioning in the ground, said anchor means having an upright upper bag engaging portion;
resilient bag means defining a recess in its under surface, the opening leading to the recess being sized less than the size of the largest horizontal cross section through the upper bag engaging portion, such that the portion of the bag surrounding the recess opening stretches as the bag means receives the upper bag engaging portion within the recess to thereby releasably retain the bag means in engagement with the upper bag engaging portion;
said upper bag engaging portion being of progressively increasing horizontal cross section from the bottom of such portion to the top of such portion and in which the recess is of progressively increasing horizontal cross section from the recess opening upwardly to a first location spaced above the recess opening;
said bag means including means for limiting the depth of insertion of the bag engaging portion into the recess; and
said bag means including means for providing plural cushioning air pockets between the upper surface of the upper bag engaging portion and the upper boundary of the recess.

4,448,415
BOWLING PIN SWEEPER MOVING APPARATUS
August Schmid, Schwerzenbach, Switzerland, assignor to Patentverwertungs-und Finanzierungsgesellschaft SERANIA AG, Glarus, Switzerland
Filed Jun. 30, 1982, Ser. No. 393,795
Int. Cl.³ A63D 5/08
U.S. Cl. 273—54 A **14 Claims**



1. Damage resistant bowling pin wiper operating device having
a wiper (35) subject to be dropped to a vertical position, and having a holding pin projecting from an upper portion thereof;
a suspension arm (1);
a hook (8) pivotably secured (9) to the suspension arm (1) having a forwardly projecting portion engageable with the holding pin (21) and a rearwardly extending portion (8a);
a support arm (4, 5) connected to the suspension arm (1) supporting the rearwardly extending portion of the hook to thereby prevent release of the pin from the hook;
an electromagnet means (10) operatively connected to the support arm to release the support arm from engagement with the rearwardly extending portion of the hook and permit release of the hook upon operation of said electromagnetic means,
and wherein, in accordance with the invention,
the support arm includes means (4, 5, 13, 32) including spring means (32) for releasing engagement with the extending portion (8a) of the hook (8) upon excessive force being applied on the hook (8) by the pin (21) where the hook and pin are engaged.

4,448,416
BALANCING GAME
Paul Belter, 335 Elwood Rd., East Northport, N.Y. 11731
Filed Sep. 20, 1982, Ser. No. 420,307
Int. Cl.³ A63F 7/00
U.S. Cl. 273—110 **10 Claims**



8. A game of skill comprising a frame, a table mounted on

said frame for tilting movement about a pivot point, motorized drive means on said frame operatively connected to said table for continuously inducing tilting movements of said table about said point, and manually adjustable control means on said frame adapted to be shifted into operative connection with said table eccentrically of said point for counteracting the tilting effects of said drive means in accordance with the adjusted position of said control means.

4,448,417

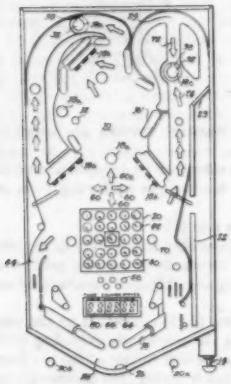
PINBALL GAME WITH SIMULATED PROJECTILE DISPLAY

Norman R. Clark, Burbank, and George Christian, Melrose Park, both of Ill., assignors to Bally Manufacturing Corporation, Chicago, Ill.

Filed Apr. 22, 1982, Ser. No. 370,983

Int. Cl.³ A63F 7/02

U.S. Cl. 273—121 A **14 Claims**



1. A pinball game comprising a playfield having a plurality of targets, means for introducing a projectile onto said playfield, means for manipulating said projectile on said playfield to contact said targets, a plurality of individual light devices in a spatial array, means for actuating one of said light devices, player controlled means for stepwise actuating the other light devices to simulate a projectile, means on the playfield for indicating a player determined direction of stepwise actuation of the simulated projectile, means providing an objective for movement of said simulated projectile, and scoring means for tabulating events of said projectile on said playfield and events on said array.

4,448,418

SURFACE PROJECTILE AND TARGET GAME

Locksley D. McNeill, 584 Ash St., Winnipeg, Manitoba, Canada R3N 0R4

Filed Sep. 7, 1982, Ser. No. 415,168

Claims priority, application United Kingdom, Sep. 24, 1981, 8128847

Int. Cl.³ A63B 63/00, 43/04

U.S. Cl. 273—123 A **11 Claims**

1. A combination for playing a game comprising a ball having an outer flexible resilient enclosing envelope and a comminuted material inside the envelope which is free to move within the envelope, and a target board having a front edge and an upper surface and including means for supporting the board such that the front edge thereof can rest upon the ground with the upper surface inclined upwardly away from said front edge, a plurality of dividers extending upwardly from said upper surface to both the transverse and lengthwise directions of the board to define a plurality of compartments each adapted to receive said ball whereby the ball can roll

from the ground onto said board to enter one of said compartments.

4,448,419

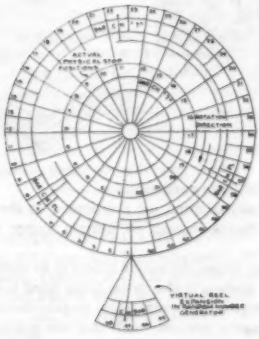
ELECTRONIC GAMING DEVICE UTILIZING A RANDOM NUMBER GENERATOR FOR SELECTING THE REEL STOP POSITIONS

Inge S. Telnaes, 4435 Canyon Dr., Reno, Nev. 89509

Filed Feb. 24, 1982, Ser. No. 352,048

Int. Cl.³ A63F 5/04

U.S. Cl. 273—143 R **10 Claims**



1. A game apparatus, comprising:

a reel mounted for rotation about an axis through a predetermined number of radial positions;

means to start rotation of said reel about said axis;

indicia fixed to said reel to indicate the angular rotational position of said reel;

means for assigning a plurality of numbers representing said angular positions of said reel, said plurality of numbers exceeding said predetermined number of radial positions such that some rotational positions are represented by a plurality of numbers;

means for randomly selecting one of said plurality of assigned numbers; and

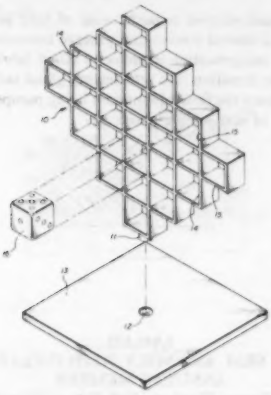
means for stopping said reel at the angular position represented by said selected number.

4,448,420

UPRIGHT GAME WITH INSERTABLE DICE

Ricardo Escamilla-Kelly, 8374 Leamont, Houston, Tex. 77072

Filed Feb. 8, 1982, Ser. No. 346,541
Int. Cl.³ A63F 3/00
U.S. Cl. 273—241 **3 Claims**



1. A two-person competitive game of skill comprising
a playing grille having 25 square shaped openings, each being substantially cubic in dimensions,
said grille having said openings disposed horizontally in substantially parallel relation and being arranged in a pattern having both in-line and diagonally positioned openings,
twenty-five conventionally numbered dice of a size just fitting said openings, used as non-chance playing pieces by the players,
said dice being played alternately by each player inserting a die into one of said openings from opposite sides of said grille in an effort to produce a score which is a multiple of seven by addition of the number on the face of the die to the numbers on the faces of at least two dice aligned linearly or diagonally therewith,
said grille having a support,
the portion of said grille adjacent to said support having only one opening, and
the remaining openings of said grille being arranged in successive rows of 3, 5, 7, 5, 3 and 1 openings arranged symmetrically.

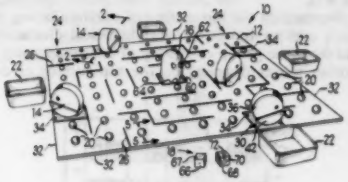
4,448,421

BOARD GAME HAVING APERTURED, MARKER-RECEIVABLE PLAYING PIECES

John V. Zaruba, Chicago, and Harry Disko, South Barrington, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Jan. 18, 1982, Ser. No. 339,850
Int. Cl.³ A63F 3/00
U.S. Cl. 273—243 **9 Claims**

1. A board game device comprising:
a playing surface;
a plurality of markers positionable on said playing surface;
a first playing piece adapted to receive said markers within the interior of said playing piece upon engagement of one of said markers by said first playing piece;
said first playing piece including a first portion contacting the playing surface and a second portion supported atop of said playing surface by said first portion;
an opening in one of said portions for receiving a marker within the interior of said first playing piece; and
said first and second portions being pivotally connected for relative movement such that said second portion is movable away from said playing surface and back downwardly toward said playing surface so as to capture a marker within its interior by forcing the marker through said opening.

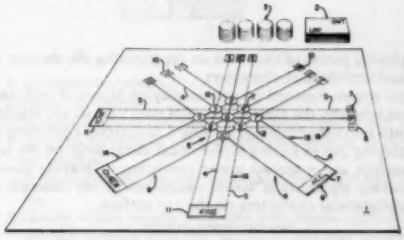


4,448,422

BOARD GAME APPARATUS

Donald G. Rose, Friends Hospital, Philadelphia, Pa. 19124

Filed Feb. 22, 1982, Ser. No. 351,240
Int. Cl.³ A63F 3/00
U.S. Cl. 273—271 **22 Claims**



1. A game board adapted for use in conjunction with a board game apparatus, said game board comprising:
(a) a plurality of linear indicia; and
(b) a plurality of numerical indicia;
(c) wherein said linear indicia combine to form a plurality of groups;
(d) wherein said groups of linear indicia intersect one another in an essentially centrally disposed region of said game board;
(e) wherein a first series of numerical indicia are operatively associated with selected intersections of linear indicia; and
(f) wherein a second series of numerical indicia are operatively associated with an end of each group of linear indicia, a single one of said second series of numerical indicia intersecting with the end of each of the linear indicia forming said associated group, and said single one of said second series of numerical indicia being common to all said linear indicia within said group.

4,448,423

BOARD GAME

George V. Augusta, 40 Reinert 71 John Wise Ave., Essex, Mass. 01929

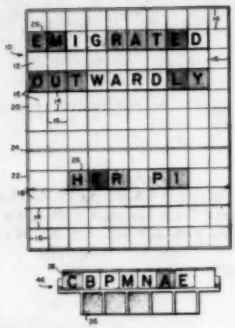
Filed Sep. 20, 1982, Ser. No. 419,756
Int. Cl.³ A63F 3/00
U.S. Cl. 273—272 **11 Claims**

1. A board game apparatus comprising a playing board having a flat surface, to receive, thereon, playing pieces having a definite configuration, and adapted to be used by at least two players comprising:
means on said flat surface dividing said surface into first and second sections, the surfaces of said first and second sec-

tions adapted to receive playing pieces placed in juxtaposition on said surfaces to form words,

a plurality of sets of playing pieces, means disposed on each said set of playing pieces distinguishing each said set from other sets,

means disposed on the top surface of certain playing pieces of each said set representing alphabetical characters selected from the group consisting of consonants and vowels, other means disposed on the top surface of certain



playing pieces of each said set representing the absence of said alphabetical characters,

other means disposed on certain playing pieces of each said set whereby the playing pieces of each said set are divided into two subgroups comprising a first group consisting of playing pieces having alphabetical consonants on the top surface and a second group consisting of playing pieces having alphabetical vowel characters or the absence of alphabetical characters on the top surface.

4,448,424

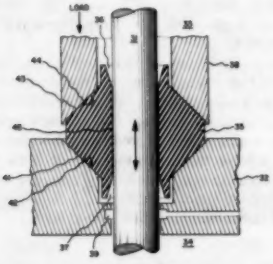
DOUBLE ANGLE SEAL FORMING LUBRICANT FILM

William D. Ernst, Troy, N.Y., assignor to Mechanical Technology Incorporated, Latham, N.Y.

Filed Nov. 24, 1982, Ser. No. 444,490

Int. Cl.³ F16J *15/24, 15/40, 15/44*

U.S. Cl. 277—30 **15 Claims**



1. A seal assembly for preventing gas leakage along a reciprocating member between a first gas chamber and a second gas chamber, including a wall through which said member extends and separating said first chamber and said second chamber; means for supplying a lubricant to the surface of said reciprocating member in at least one of said first and second gas chambers; a sealing gland having a first and second end and held against the wall between the first chamber and the second chamber; the improvement comprising:

means for mounting said sealing gland to said reciprocating member to provide for a predetermined radial load;

means at said first end of said sealing gland proximate the lubricant supply forming a first convergent passage between said gland and said reciprocating member operative to effect lubricant pumping in the direction into said sealing gland and sufficient to overcome said radial load and establish a finite lubricant film between the confronting surfaces of the reciprocating member and the sealing gland;

means at said second opposite end of said sealing gland forming a second convergent passage between said gland and said reciprocating member to effect lubricant pumping in the direction into said sealing gland sufficient to at least balance the flow of lubricant being pumped from said first end of said sealing gland.

4,448,425

SHAFT SEAL ASSEMBLY WITH INFLATABLE ANNULAR MEMBER

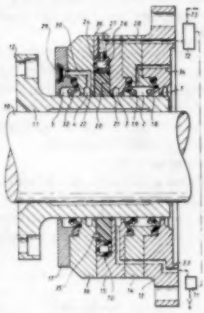
Ernst P. von Bergen, Hamburg, Fed. Rep. of Germany, assignor to Howaldtswerke-Deutsche Werft Aktiengesellschaft Hamburg und Kiel, Fed. Rep. of Germany

Filed Nov. 1, 1982, Ser. No. 438,307

Claims priority, application Fed. Rep. of Germany, Nov. 5, 1981, 3143866

Int. Cl.³ F16J *15/32, 15/54*

U.S. Cl. 277—34 **12 Claims**



1. A shaft seal assembly for sealing a shaft emerging from a housing, the assembly comprising:

a shaft around which the seal assembly is applied,

radial-contact seal disposed concentric with the shaft and consisting of a plurality of segments which have circumferentially overlapping ends,

said contact seal being disposed coaxially with the shaft within an annular chamber of said housing, the seal assembly including means for nonrotatably and axially supporting the contact seal within said housing,

at least one inflatable member inserted in said annular chamber, to peripherally contact said contact seal,

conduit means connecting said inflatable member to a supply system of an adjustable pressurized medium for inflating said inflatable member,

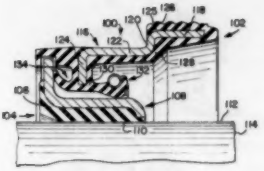
whereby in use the contact seal segments are radially constrained and forced against the shaft by the pressure of the pressurized medium in said inflatable member in inflated condition.

4,448,426

UNITIZED OIL SEALS

Ronald A. Jackowski, Algonquin, and Glenn W. Peisker, Barrington, both of Ill., assignors to Chicago Rawhide Manufacturing Company, Elgin, Ill.

Filed Jul. 6, 1981, Ser. No. 280,888
Int. Cl.³ F16J 15/34
U.S. Cl. 277—37 13 Claims



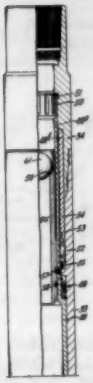
1. A unitized oil seal assembly comprising, in combination, first and second components adapted to cooperate with each other in use to form said unitized assembly, said first component being a lip-containing assembly and said second component being a companion flange assembly, said first component comprising an annular casing made from a rigid material and having at least one axial flange and one radial flange, a rubber element bonded to and surrounding a portion of said first component casing, said rubber element including an annular portion covering at least a portion of the exterior of said axial flange on said first component casing so as to form a rubber covered, outer diameter, secondary seal-forming surface for said first component, and a seal body portion boned to said first component radial flange, said seal body portion including a primary lip-forming part extending generally axially inwardly from said first component radial flange, said lip forming part comprising oil and air side frustoconical surfaces joined at their inner margins to form a primary lip seal band, and an auxiliary lip forming part extending at least partially axially outwardly of said first component radial flange and being defined by an annular surfaces which cooperate to define the body of said auxiliary lip, said second component including a single rigid casing portion with axial and radial companion flanges, a radially outwardly directed surface of said axial companion flange being sized so as to engage said seal band of said primary lip in fluid-tight relation, with one of said axial and radial surfaces of said companion flange being also sized and positioned to engage said auxiliary lip to form an excluder seal, an annular body of seal-forming material bonded to a radially inwardly directed surface of said axial companion flange and adapted for engagement with an associated machine element, said axial companion flange having a radially inturned flange thereon and forming the axially innermost end thereof, said innermost end being free from radially outwardly extending portions and having a reduced diameter relative to said radially outwardly directed axial flange surface, and unitizing means extending axially outwardly from at least one of said flanges of said first component, said unitizing means having at least one radially extending surface adapted to cooperate with another radially extending portion of said first component to assist in axial positioning of said second component by limiting relative axial movement of said first and second component and to insure mutual engagement of said primary and auxiliary seal lips with sealing surfaces on said companion flange.

4,448,427

PISTON-EXPANDED METALLIC SEAL FOR SIDE DOOR WELL VALVE

Howard R. Mashaw, Jr., The Colony, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Jun. 10, 1983, Ser. No. 503,173
Int. Cl.³ F16J 15/40; E21B 23/00
U.S. Cl. 277—73 8 Claims



1. A valve comprising,
a tubular housing,
tube means having one end fixed in said housing and a section spaced radially inward from said housing to provide an annulus,
port means in said housing communicating with said annulus,
flowway means remote from said port means communicating said annulus with the interior of said tube means,
stop means in said annulus,
metallic seal means slidably carried in said housing and movable from a first position spaced from the annulus between said port means and flowway means and to a second position in said annulus between said port means and flowway means,
piston means slidable in said housing for moving said seal means from said first to said second position and expanding said seal means against said stop means to prevent flow through said ports, and
releasable means preventing sliding of said seal means and said piston means in said housing with said seal means in said first position.

4,448,428

MECHANICAL SEAL ASSEMBLY

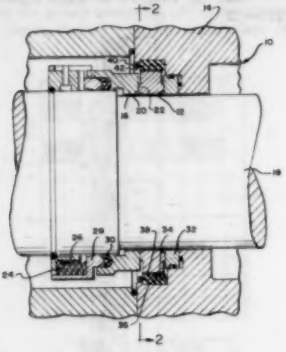
Joseph A. Marsi, R. Palos Verdes, Calif., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Feb. 8, 1982, Ser. No. 346,812
Int. Cl.³ F16J 15/34
U.S. Cl. 277—92 2 Claims

1. A mechanical seal assembly for separating two fluids and comprising:
a housing;
a rotatable shaft in said housing and surrounded by said housing;
a stationary seal ring in and connected to said housing, said stationary seal ring surrounding said shaft;
a rotatable seal ring surrounding and connected to said shaft;
said seal rings having opposed seal faces lubricated by a film of one of said fluids flowing thereacross;
spring means urging one seal ring axially toward the other;
one seal ring being of a relatively brittle material and the other seal ring being of a less brittle material;

at least one axially elongated keyway in said housing positioned to overlie said stationary seal ring;

at least one axially elongated complimentary keyway in an outer portion of said stationary seal ring in radial alignment with the keyway in said housing; and



a generally rectangular-sectioned, axially elongated, elastomer key in said keyways forming the connection between said housing and said stationary seal ring, said elastomer key being distortable to substantially prevent breakage and similar damage to said relatively brittle seal ring in the event of failure of said fluid film flowing across said seal faces.

4,448,429

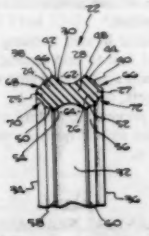
ELASTOMER ENERGIZED SEAL

Guy A. Thomas, Oxnard, Calif., assignor to W. S. Shamban & Company, Santa Monica, Calif.

Filed Sep. 30, 1982, Ser. No. 429,857

Int. Cl.³ F16J *15/32*

U.S. Cl. 277—165 **16 Claims**



1. An expander adapted for use in supporting a cap seal for preventing the leakage of fluid past two members having mating surfaces, one of said surfaces having a groove for housing said expander and cap seal, said groove having a bottom surface, sides and an open top, said expander being mounted below said cap seal in said groove and being sized for pressuring said cap seal against the other of said surfaces to prevent said fluid leakage therebetween, said expander comprising:

a resilient body having a first lobe portion and a second lobe portion, said lobe portions being integrally connected by a center portion, said lobe portions having arcuate top surfaces with an outermost portion defining an apex, outer side surfaces and bottom surfaces, wherein each of said lobe portion top surfaces includes a pressure ridge located at said top surface apex for applying spaced localized pressure to said cap seal to provide said seal between said cap seal and said other surfaces.

4,448,430

HOLLOW REINFORCED SEALING STRIPS

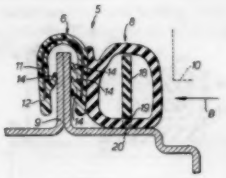
Robert G. Bright, Viersen, Fed. Rep. of Germany, assignor to Draftex Development AG, Zug, Switzerland

Filed Sep. 21, 1982, Ser. No. 420,529

Claims priority, application United Kingdom, Jan. 27, 1982, 8202279

Int. Cl.³ E06B *7/23*; F16J *15/10*

U.S. Cl. 277—184 **13 Claims**



1. A sealing strip, comprising

a length of soft flexible sealing material defining a longitudinally extending hollow interior, and

a reinforcing member made of soft flexible material integral with the sealing material and positioned in the hollow interior of the sealing material at a position therein where the sealing material is to be curved,

the reinforcing member being of narrow strip-like cross-sectional configuration and having integral reduced-thickness webs running along the edges of it which define its width, the webs being integrally joined with the sealing material so that the width of the reinforcing member extends across the whole of the width of the hollow interior in one direction thereacross but extends across only a small proportion of the width of the hollow interior in the perpendicular direction, whereby to support the sealing material when it is curved with the said one direction lying in the plane of curvature and without substantially impairing the compressibility of the sealing material in the said perpendicular direction.

4,448,431

CYLINDER HEAD GASKET

Klaus-Peter Majewski; Martin Morsbach, both of Burscheid, and Dietrich Schülz, Leverkusen, all of Fed. Rep. of Germany, assignors to Goetze AG, Burscheid, Fed. Rep. of Germany

Filed Jun. 15, 1979, Ser. No. 48,996

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1978, 2826386

Int. Cl.³ F16J *15/10*

U.S. Cl. 277—325 B **3 Claims**

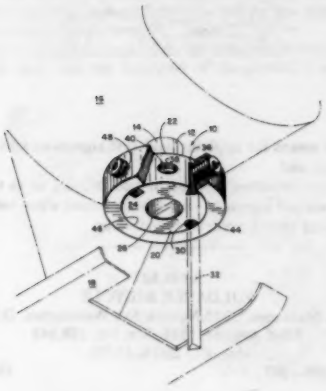
1. In a cylinder head gasket for an internal-combustion engine, composed of a disc of fibrous and/or porous soft material provided with passages, and a metallic casing extending around one such passage and presenting two arms each disposed at a respective side of the disc with at least one arm being angled in the direction toward the soft material, and a saturating agent which is plastic or elastic when installed and which fills the pores of the soft material except for the region underneath the casing, the improvement wherein the angled portion of said at least one arm has the configuration of an annular recess directed toward the interior of said disc in the immediate vicinity of the end of said one flange arm and said annular recess is pressed into said at least one arm after said casing has been placed around said disc and compresses the material of said disc thereunder to an extent sufficient to prevent movement of the saturating agent through said disc beyond the region where said recess compresses said disc material.

4,448,432

SABRE SAW CHUCK

Errol J. French, P.O. Box 1314, Chattanooga, Tenn. 37401

Filed Jun. 19, 1981, Ser. No. 275,253
Int. Cl.³ B23B *31/12*; B23Q *3/00*
U.S. Cl. 279—83 3 Claims



1. A sabre saw chuck for securing a shank of one or more files/rasps to a reciprocatable standard sabre saw head which normally holds a saw blade in place such that such files/rasps are reciprocated during reciprocating operation of such head, said chuck comprising:

an adaptor body having an upper surface and a lower surface and provided with a centrally disposed bore extending therethrough, said centrally disposed bore being disposed for receiving such sabre saw head therein, said adaptor body having a preselected cross-sectional outline and at least one groove disposed along the perimeter of said adaptor body for receiving such shank of a file/rasp, said groove being substantially parallel with said centrally disposed bore and opening on said lower surface of said adaptor body, and wherein said adaptor body defines a first radial bore opening into said centrally disposed bore;

a sleeve member having a centrally disposed opening proportioned for receiving said adaptor body, said sleeve member provided with a radial hole extending substantially perpendicularly with respect to the axis of said centrally disposed opening and designed for being juxtaposed with respect to said groove in said perimeter of said adaptor body, and wherein said sleeve member defines a further radial bore for alignment with said first radial bore in said adaptor body;

securing means extending through said radial hole in said sleeve member for releasably engaging such shank of a file/rasp disposed in said groove of said adaptor body; and

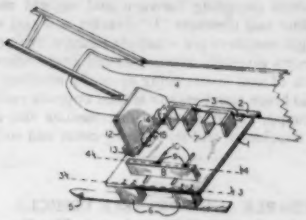
a set screw passing through said first and further radial bores, when aligned, for releasably joining said adaptor body and said sleeve member with such head whereby reciprocation of such head imparts a like reciprocating motion to said chuck and said files/rasps carried thereby, said set screw having a first end portion for engagement with such head and a further end portion which is recessed within said further radial bore in said sleeve member.

4,448,433

TOBOGGAN PLATFORM

Chris Zeller, 2403 County Rd. 203 #20, and Jeff Ohmstedt, 23 La Plata Pl., both of, Durango, Colo. 81301

Filed Apr. 20, 1982, Ser. No. 370,045
Int. Cl.³ B62B *13/16*
U.S. Cl. 280—18 1 Claim



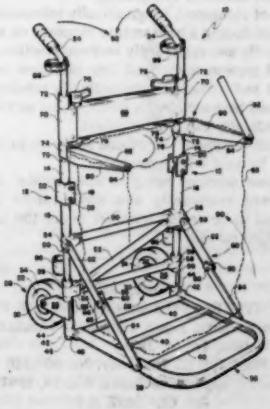
1. A platform having on one side hinges and a brace for means of attachment of said platform to a snow toboggan and for means of folding said platform into said toboggan, a snow ski communicating with said platform opposite said hinges for means of gliding same across snow, an adjustable foot brace and knee braces mounted atop said platform for means of supporting a rescuers' lower body while kneeling atop said platform, a verticle support for means of maintaining in a somewhat verticle position the midsection of said rescuer, operably connected atop said platform to enable said verticle support to be removeable from said platform to facilitate the folding of said platform into said toboggan.

4,448,434

COLLAPSIBLE HAND TRUCK

Milan B. Anderson, P.O. Box 178088, San Diego, Calif. 92117

Filed Dec. 30, 1981, Ser. No. 335,875
Int. Cl.³ B62B *1/12*
U.S. Cl. 280—40 9 Claims



1. An improved collapsible hand truck comprising:

a pair of side-by-side, spaced-apart, segmented, upright members, each of the segments of each upright member are pivotally attached in a spaced-apart relationship to a common "U" bracket and each upright comprises a handle member formed on one end thereof, extending at an angle therefrom and a wheel rotatably attached near the end remote from said handle member and extending therefrom in a direction of the distal end of said handle mem-

ber, whereby said handle member and wheel lie along a common plane and the open portion of said "U" bracket is perpendicular to said common plane;

a load-carrying bracket positioned between and rotatably attached to the upright members adjacent the handle member end thereof;

a weight support shelf member rotatably attached to the upright members at their wheel adjacent ends;

brace members extending between said upright members intermediate said common "U" bracket and said wheels, said upright members are rotatable relative thereto; and

a pair of levers pivotally interconnected intermediate their ends, each of said levers being pivotally attached at one end to said brace members and at their opposite end to said weight support shelf member intermediate the upright member attachment and its opposite outer end surface.

4,448,435

FOLDABLE AND PORTABLE VEHICLE

David T. Hon, Los Angeles, Calif., assignor to Hon Corporation International, Los Angeles, Calif.

Division of Ser. No. 233,624, Feb. 12, 1981. This application Sep. 29, 1982, Ser. No. 427,434

Int. Cl.³ B62K *15/00*; F16M *11/24*

U.S. Cl. 280—278 **14 Claims**

1. In a foldable and portable bicycle having a frame with front and rear ends, an improved longitudinally extendable and collapsible seat assembly comprising:

a plurality of elongated, longitudinally telescoping seat post sections including a base section mounted on said frame in an upwardly and rearwardly inclined position, and at least a second section telescoped into said base section to be extended and collapsed longitudinally relative thereto;

means on said base section for latching said second section in a longitudinally extended position;

and a seat on the upper end of said seat post to be raised and lowered by said second section;

said seat post sections being of non-circular cross-section and having rearwardly and downwardly facing sides positioned to be nested together under the force applied by a weight on said seat.

4,448,436

LOCKING SYSTEM FOR ROLLING-TYPE TRICYCLE

Kohei Ohzono, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 12, 1982, Ser. No. 397,160

Claims priority, application Japan, Jul. 14, 1981, 56-109750

Int. Cl.³ B62K *5/06*

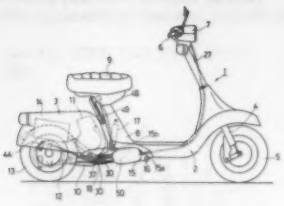
U.S. Cl. 280—282 **24 Claims**

1. A locking system in a rolling-type tricycle having front and rear bodies coupled together for relative rolling movement, comprising:

means for braking at least one rear wheel of said tricycle;

restraint means for locking the relative rolling movement of said bodies;

driving means, operatively cooperating with said braking means and said restraint means, for causing said braking means and said restraint means to perform braking and locking operations, respectively, in response to predetermined first signals, and for performing said locking of said restraint means in response to predetermined second signals;



control means for applying said first signals to said driving means; and

means for detecting a speed of said tricycle so as to apply said second signals to said driving means when said speed is lower than a predetermined value.

4,448,437

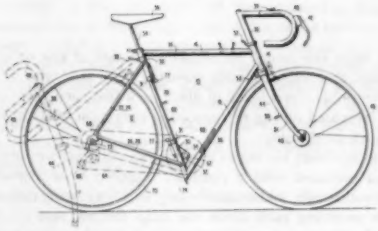
FOLDABLE BICYCLE

Harry D. Montague, 3042 Newark St., Washington, D.C.

Filed Aug. 31, 1981, Ser. No. 298,145

Int. Cl.³ B62K *15/00*

U.S. Cl. 280—287 **18 Claims**



1. A foldable bicycle frame comprising;

a complete closed front frame having a first hollow member to accommodate a seat post,

a complete rear frame having a second hollow member to accommodate said seat post, said first and second hollow members being concentric to define a joining section, whereby said front and rear frames are foldable about said hollow members, and

means to secure said first and second hollow members into a rigid orientation.

4,448,438

BOAT TRAILER WITH IMPROVED AFT SUPPORT CRADLE

Arnold R. DeWalk, Hubbard, Ohio, assignor to The Tee Nee Trailer Company, Youngstown, Ohio

Filed Sep. 23, 1981, Ser. No. 304,719

Int. Cl.³ B60P *3/10*

U.S. Cl. 280—414.1 **7 Claims**

1. A boat trailer for towing a boat and for loading and launching the boat from and onto a body of water, comprising:

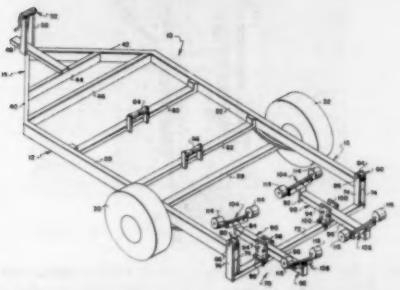
(a) a wheel supported trailer frame including longitudinally-extending frame rails and at least one transversely-extending member interconnecting the frame rails;

(b) hull support means carried on the frame for engaging portions of the hull of a boat which has been loaded onto the trailer;

(c) aft support cradle means including a cross-bar having upwardly extending support arms near opposite ends thereof, the support arms being pivotally connected to aft end portions of the frame rails at pivotal connection locations disposed near the upper surfaces of the frame rails;

(d) the cradle means additionally including longitudinally-extending rocker arms means fastened to the cross-bar and including a forwardly-extending portion for carrying at least one forward hull engagement roller, a rearwardly-extending portion for carrying at least one rearward hull engagement roller, a forward hull engagement roller carried on the forwardly-extending portion, and a rearward hull engagement roller carried on the rearwardly-extending portion; and,

(e) the cradle means and its rocker arm means being configured such that the locations of the pivotal connections



between the support arms and the frame rails are above the locations at which the forward and rearward hull engagement rollers are carried on the rocker arm means when the cradle means is in a loaded position wherein the forward and rearward hull engagement rollers are substantially level with each other, for assuring that during launching of a boat from the trailer, as the cradle means begins to pivot from its loaded position toward a launched position wherein the forward hull engagement roller is relatively higher than the rearward hull engagement roller, the forward and rearward hull engagement rollers are caused to move in unison in a forward direction, and for assuring that during loading of a boat trailer, as the cradle begins to pivot from said launched position toward said loaded position, the forward and rearward hull engagement rollers are caused to move in unison in a rearward direction.

4,448,439

SAFETY TRAILER HITCH

Edgar J. Huffman, 210 S. Broadway, St. John, Kans. 67576

Filed Apr. 5, 1982, Ser. No. 365,371

Int. Cl.³ B60D *1/04*

U.S. Cl. 280—504 **6 Claims**

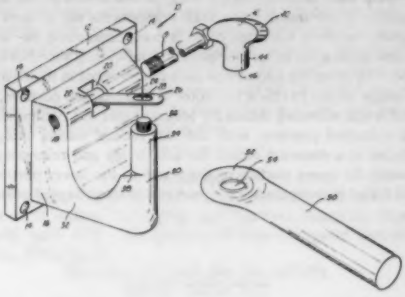
6. A trailer hitch for mounting on the bumper of a vehicle or the like, the hitch adapted for receiving the tongue of the trailer, the tongue having a tongue eye, the hitch comprising:

a mounting bracket having apertures therein, the apertures adapted for receiving bolts therethrough for securing the mounting bracket to the bumper of the vehicle;

a hook base attached to the front of the mounting bracket;

a "J" shaped hook, the bottom of the hook integrally formed in the hook base, the hook extending outwardly and upwardly therefrom, the top of the hook having a threaded end, the hook dimensioned for receipt through the eye of the tongue when the tongue is placed therearound, below the top of the hook are formed shoulders on both sides thereof, the shoulders adapted for receiving the end of the tongue thereon;

a threaded nut having an enlarged head thereon and a neck extending downwardly therefrom, the neck having a threaded bore therein and adapted for attachment to the threaded end of the top of the hook to prevent the tongue from being removed from the hitch when the trailer is being pulled; and



a flapper, one end of the flapper pivotally mounted on the hook base, the other end of the flapper having an aperture, the threaded end in the top of the hook received through the aperture in the flapper, the threaded nut securing the flapper in place, the flapper adapted for preventing the tongue from contacting the threaded nut when the vehicle is pulling the trailer therebehind.

4,448,440

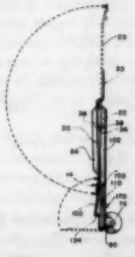
COLLAPSIBLE HAND TRUCK

Rolland H. Gier, 2013 Harold, Salina, Kans. 67401

Filed Mar. 1, 1979, Ser. No. 16,398

Int. Cl.³ B62B *1/04*

U.S. Cl. 280—655 **3 Claims**



1. In a hand truck of the class wherein an elongated and generally planar frame inclusive of upper and lower portions is adapted to be manually held at its upper end, and wherein the lower end of the frame is provided with a load supporting and generally planar platform disposed on one side of and sharply inclined thereto for operative use, together with a pair of ground wheels mounted on the lower end of the frame and disposed for operative use on the other side of the latter opposite the platform, the improvement comprising the platform being pivotally secured to the lower end portion of the frame for swinging movement toward the upper end of the frame between its operative position in which it is sharply inclined to the frame to a collapsed position thereof that is on said one side of the frame and in close proximity to and in approximate parallelism with the lower end of the frame, means pivotally connecting the upper and lower end portions of the frame for swinging movement of the upper end portion of the frame from its operative position in which it is generally coplanar with the lower portion of the frame to a collapsed position

wherein the same extends toward the lower frame and from its pivotal connection to the latter and wherein the same is on said one side of and in close proximity to and in approximate parallelism to the lower portion of the frame, the arrangement being such that the platform and the upper end portion of the frame overlap each other along the longitudinal extent of the lower portion of the frame when such components are in their collapsed positions with one of such components and the lower frame having the other component sandwiched therebetween, whereby securing said one of such components in its collapsed position serves to retain the other in its collapsed position, and said truck including means for securing said one component in its collapsed position, with the last recited means being included in a common means for selectively and releasably securing the upper portion of the frame to the lower portion of the frame in its operative position and in its collapsed position.

4,448,441

INDEPENDENT FRONT AXLE SUSPENSION FOR PASSENGER CARS

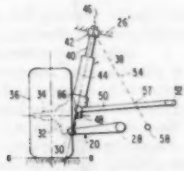
Hans J. Brümmer, Kernen; Karlheinz Böse, Fellbach; Frank Knothe, Stuttgart; Hans-Hermann Keller, Notzingen, and Henning Wallentowitz, Aichwald, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Nov. 18, 1982, Ser. No. 442,759

Claims priority, application Fed. Rep. of Germany, Nov. 20, 1981, 3145988

Int. Cl.³ B60G *3/00*

U.S. Cl. 280—691 **7 Claims**



1. An independent front axle suspension for passenger vehicles comprising a suspension possessing a lower guide member, extending transversely to the longitudinal direction of the vehicle body and being flexibly coupled to the vehicle body; the suspension also possessing a shock absorber strut located between the guide member and the vehicle body, the strut being connected at its upper end by a coupling point, via a flexible support, to the vehicle body; and possessing a wheel carrier connected to the shock absorber strut, in which suspension a wheel, mounted on the wheel carrier, is able to move about a steering axis defined by the upper coupling point of the shock absorber strut, coaxial with the shock absorber strut, to a guide link, the supporting joint being located a substantial distance below the axis of the wheel in which suspension, the wheel carrier or the shock absorber strut being coupled to a steering track rod extending in the transverse direction of the vehicle body, and in which suspension an instantaneous rotation axis is present, extending downwards from the upper coupling point of the shock absorber strut about which axis the total mass of the front axle suspension is capable of vibrating, the instantaneous rotation axis and the axis of the steering track rod substantially intersect one another.

4,448,442

LONGITUDINALLY ADJUSTABLE SKI POLE

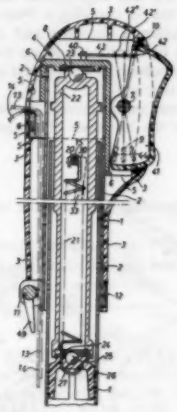
Hans Weber-Henning, Dorfhalde 14, Stäfa, 8712, and Peter Weber, Haltenstrasse 146, Meilen, 8706, both of Switzerland

Filed Jan. 4, 1982, Ser. No. 336,610

Claims priority, application Switzerland, Jan. 8, 1981, 9681

Int. Cl.³ A63C *11/22*

U.S. Cl. 280—823 **13 Claims**



1. An improved ski pole having an adjustable length, which said ski pole is provided with two telescopically movable tube sections which are inserted into each other and are arrestable at their respective positions by an arresting means, which said ski pole is provided further with an operating member located at a handle portion of said ski pole and operational for mutual arresting or unlatching of both said tube sections, which said operating member is arranged to be reachable by the finders of the skier's hand gripping said ski pole, which arresting means comprises a latching arrangement having a plurality of catches and whereby there is provided a spring which engages at the one end the inner tube section and at the other end the outer tube section, which said spring biasses both said tube sections away from each other,

the improvement comprising a pivoting cylinder at which said catches are provided, which said pivoting cylinder is provided with a groove where said catches form a part of said groove, which said pivoting cylinder is pivotably supported in said inner tube section and operationally connected to said operating member.

4,448,443

CONTINUOUS FORM BOOK PROCESSING KIT

Robert A. Jones, Minneapolis, Minn., assignor to Catalog Corporation of America, Inc., Burnsville, Minn.

Filed Dec. 30, 1981, Ser. No. 335,724

Int. Cl.³ B42D *15/00*; B32B *31/00*

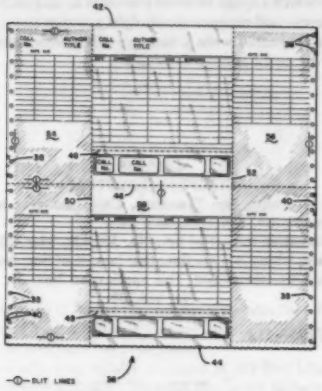
U.S. Cl. 281—5 **2 Claims**

1. A pre-printed continuous form containing a plurality of book processing kits, wherein said book processing kits are printed on a paperstock having a plurality of line holes formed therein and index marks printed on each of the side edges thereof for permitting the controlled feeding and indexing of the paperstock in a computer controlled line printer that appropriately prints book identification data on each of the form parts, each of said book processing kits comprising:

(a) a pocket part back for adhesive attachment to and for identifying a unique one of a plurality of books and having a plurality of printed vertical and horizontal columns and lines within which the due date of the book may be manually entered upon loaning the book to a borrower;

(b) a circulation card having a plurality of printed vertical and horizontal columns and lines for correspondingly identifying the book identified by said pocket-part and for providing the library with a retainable record of the due date and borrower's name;

(c) a removable stub containing at least one removable piggyback adhesive label that identifies and is for attachment to said identified book; and wherein



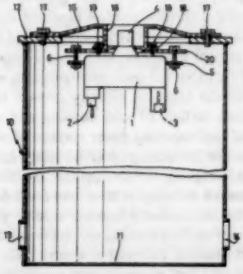
(d) said pocket part back is semipermanently attached to said circulation card and said stub along an adjacent edge of each and said stub is also semipermanently attached to said circulation card along a common edge of each, whereby all the parts of each of said kits may be simultaneously and automatically prepared for subsequent manual separation and mounting in the correspondingly identified books.

4,448,444

POWER SUPPLY HOUSINGS FOR EXTERIOR LIGHT APPARATUS

Etienne G. Toussaint, Brussels, Belgium, assignor to Societe Anonyme des Etablissements Adrien de Backer, Brussels, Belgium

Filed Jul. 8, 1981, Ser. No. 281,337
Int. Cl.³ H01F *27/02*
U.S. Cl. 361—331 **2 Claims**



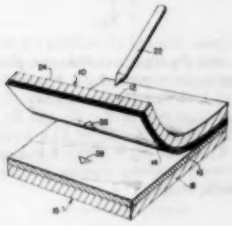
1. In an airport light deep base intended for an elevated-type light, said deep base having a removable base plate cover with a central opening fitted with a tapped hole used to secure the elevated light and ending at a ring flange having a central opening located coaxially with said cover central opening, said ring flange having a plurality of apertures therein, the improvement comprising a suspended isolating transformer including an envelope having moulded primary plug and receptacle terminal means at its lower end, moulded secondary receptacle terminal means at its upper end adapted to fit a feeder of the light, and apertured attachment means; and suspension means comprising a support ring secured to the ring flange and having a central opening that is coaxially disposed with respect to the cover central opening, said support ring having apertures arranged around the central opening which cooperate with apertures in the transformer attachment means via securing members and suspend the isolating transformer away from the bottom of said deep base and position the moulded secondary terminal means within the cover central opening and thereby allow the direct plug-in of the light feeder into said secondary terminal means.

4,448,445

PRESSURE-SENSITIVE RECORD SYSTEM

John C. H. Chang, Naperville, and Theodore Dimitriou, Deerfield, both of Ill., assignors to Wallace Computer Services, Inc., Hillside, Ill.

Filed Feb. 10, 1982, Ser. No. 347,171
Int. Cl.³ B41M *5/22*
U.S. Cl. 346—206 **10 Claims**



1. A pressure-sensitive record system comprising a plurality of sheets in superposed relationship, wherein

at least one of said sheets comprises a support bearing an autogenous layer comprising microscopic pressure-rupturable capsules and an electron-acceptor material;

at least one other of said sheets comprises a support bearing a color-developer layer comprising electron-acceptor material;

said autogenous layer and said color-developer layer being in direct, superimposed contact;

at least one of said supports being a semi-translucent support;

said capsules containing chromogenic material in amount sufficient to form a visible colored marking in said autogenous layer and to transfer to said color-developing layer to form a visible colored marking therein;

said semi-translucent support being sufficiently translucent that the colored marking formed on one side of said semi-translucent support is visible from the other side of said semi-translucent support with the naked eye.

4,448,446

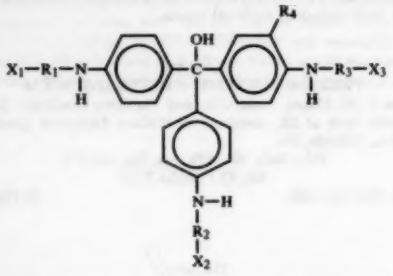
PROCESS FOR THE PURIFICATION OF TRIPHENYLMETHANE COMPOUNDS AND PRESSURE SENSITIVE COPYSHEET CONTAINING SAME

Robert J. Flores, Cincinnati, Ohio, assignor to The Sherwin-Williams Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 328,899, Dec. 9, 1981, abandoned. This application Dec. 23, 1982, Ser. No. 452,678
Int. Cl.³ B41M *5/22*
U.S. Cl. 346—224 **36 Claims**

1. In a pressure-sensitive carbonless copy media having a first sheet in contiguous interfacial relation with a second sheet wherein said first sheet comprises a planar sheet material having coated thereon a substantially colorless dye precursor

which is encapsulated or dispersed in a pressure-sensitive coating and wherein said second sheet comprises a planar sheet material having coated thereon an electron accepting material whereby the application of pressure effects a rupture of the capsular elements or coating in the area of applied pressure to effect a co-reacting and color-producing relationship between the dye precursor and the electron accepting material, the improvement which comprises utilizing as a dye precursor a purified triphenylmethane compound in its carbinol form and wherein said compound in its carbinol form has the following general structural formula:



wherein R_1, R_2 and R_3 are direct linkages, phenyl, or napthyl groups; R_4 is hydrogen or methyl; X_1, X_2 and X_3 are hydrogen, halogen, alkyl of 1 to 4 carbons or alkoxy of 1 to 4 carbons; provided that at least one of R_1, R_2 and R_3 is not a direct linkage and provided that X_1, X_2 or X_3 is hydrogen when the corresponding R_1, R_2 or R_3 is a direct linkage; and wherein said dye precursor containing coating is substantially free of unreacted aromatic amine.

4,448,447

COUPLING FOR PRESSURE LINES

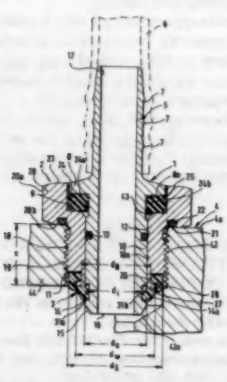
Hans G. Funk; Frank Neumann, and Dankmar Schaefer, all of Hungen, Fed. Rep. of Germany, assignors to Johannes Schaefer vormals Stettiner Schraubenwerke GmbH & Co. KG, Hungen, Fed. Rep. of Germany

Filed Mar. 2, 1982, Ser. No. 353,793

Claims priority, application Fed. Rep. of Germany, Mar. 7, 1981, 3108651

Int. Cl.³ F16L *37/00, 5/00, 39/00*

U.S. Cl. 285—4 **19 Claims**



1. A coupling adapted to connect a pressure line to a member having a threaded hole therein, comprising a receiving part having a hole therethrough and having an external thread which can be screwed into said threaded hole in said member, a plug-in part having a hole therethrough and slidably received in said hole through said receiving part, and an elastically expansible retaining ring which lockingly engages said plug-in part and said receiving part so as to fix said plug-in part and said receiving part against relative movement in an axial direction; said retaining ring being located near one end of said receiving part, extending over a surface on said one end of said receiving part, having a portion which engages an external groove provided in said plug-in part, and having projections thereon which engage recesses provided in said receiving part; and wherein said recesses are straight grooves and said projections are tangential webs which are offset with respect to one another by equal angular intervals.

4,448,448

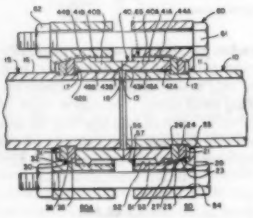
COUPLING SYSTEM

Andrew A. Pollia, San Francisco, Calif., assignor to Raphael Theresa Pollia, San Francisco, Calif.

Continuation-in-part of Ser. No. 360,428, Mar. 22, 1982, abandoned, which is a continuation-in-part of Ser. No. 263,358, May 14, 1981, abandoned. This application Nov. 26, 1982, Ser. No. 444,738

Int. Cl.³ F16L *17/06*

U.S. Cl. 285—112 **22 Claims**



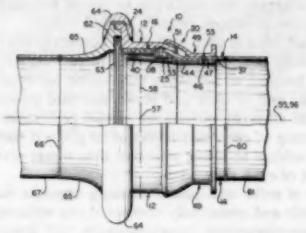
1. In a coupling assembly for coupling an elongated cylindrical first element to a second element having a front-facing thrust-bearing surface thereon extending radially outside the outer diameter of said first element, a shallow circumferential groove formed on an outer circumferential surface of said first element at a position spaced a moderate distance from the front end of said first element at which said coupling is to be made; at least one split ring mounted in said groove and having an outer circumferential surface portion tapering radially inward in a direction away from said front end of said first element; and a housing-fastener assembly, including a generally hollow cylindrical housing mounted over said split ring and having an inner surface portion tapering radially inward in a direction away from a front surface of said housing and contacting at least a portion of said tapering outer surface of said split ring, fastening means for mounting said housing to said second element with a coupling force applied therebetween, and thrust-bearing means defining at least one front-facing, thrust-bearing surface on said housing-fastener assembly at a location opposite said thrust bearing surface on said second element and displaced a short distance forward of and radially spaced from said front end of said first element, said repetitive thrust bearing surfaces being urged into thrust-bearing engagement with each other by said coupling force to take the thrust force of said fastening means and to displace said front end of said first element away from said second element; said tapered inner surface portion of said housing defining an angle with respect to the axis of said first element substantially less than twenty degrees and thereby producing a strong radial squeezing force of said split ring on said first element in response to load forces tending to separate said first and second elements.

4,448,449

FLEXIBLE PIPING JOINT AND METHOD OF FORMING SAME

Horace P. Halling, 6708 McCahill Ter., Laurel, Md. 20810, and Bernard J. Sadoff, Jr., 4524 Hornbeam Dr., Rockville, Md. 20853

Filed May 4, 1981, Ser. No. 260,162
Int. Cl.³ F16L *27/04, 25/00, 33/18*
U.S. Cl. 285—263 **20 Claims**



1. A fluid-tight coupling and sealing apparatus for a first tube and a second tube having high pressure fluid flowing therethrough, the combination comprising:

a non-metallic ring rigidly received in the first tube via an interference shrink-fit between the outer surface of said ring and the inner surface of the first tube; and

a metallic, resilient, annular sealing element rigidly coupled to and extending from the second tube,

said sealing element having a ring portion with a curved outer surface having a maximum free diameter greater than the inner diameter of the inner surface of said non-metallic ring and in contact via an interference fit with the inner surface of said non-metallic ring,

the coefficient of friction between the material of said non-metallic ring and the material of said metallic sealing element being less than the coefficient of friction between the material of said metallic sealing element and the material of the first tube,

the interference shrink-fit between said non-metallic ring and said first tube equaling $(\alpha T-\alpha R)A(T2-T1)+0.001$ inch, where αT is the coefficient of thermal expansion of said first tube over the operating temperature range, αR is the coefficient of thermal expansion of said non-metallic ring over the operating temperature range, A is the interface diameter of said ring and said first tube, T2 is the maximum operating temperature of the apparatus, and T1 is the initial temperature of the apparatus, to maintain the interference fit between said sealing element and said ring over the operating temperature of the apparatus.

4,448,450

DEFEATABLE HANDLE AND INTERLOCK FOR ELECTRICAL EQUIPMENT ENCLOSURE

John D. Kleinecke, and Thomas R. Little, both of Wichita Falls, Tex., assignors to Siemens-Allis, Inc., Atlanta, Ga.

Filed May 12, 1982, Ser. No. 377,436
Int. Cl.³ E05C *3/04;* H01H *33/48*
U.S. Cl. 292—210 **11 Claims**

1. A handle interlock for an electrical equipment enclosure having a pivoted door with a tongue extending therefrom and a jamb adjacent said door, comprising:

an elongate handle member having a manually graspable protion on one end and a shaft extending generally transversely thereto at the other end;

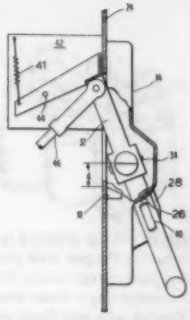
support means, secured to the jamb of the enclosure, for rotatably supporting said shaft;

an elongate arm having an opening adjacent a first end rotatably receiving said shaft therethrough, and having a second end adapted to be coupled to a mechanism within said enclosure;

a fastener releasably securing said first end of said elongate arm to said shaft for causing said arm to rotate with said shaft; and

an abutment extending from one end of said shaft, said abutment interfering with the tongue on the door when said shaft is in an on position to prevent opening of the door, said abutment being clear of said tongue when said handle is in an off position to allow opening of said door,

whereby release of said fastener allows said handle to be moved from an on position to an off position with respect to the door tongue without causing a corresponding movement of said elongate arm.

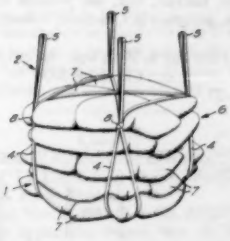


4,448,451

SELF-LOCKING SLING

Eugène J. Colson, Antwerp, Belgium, assignor to N.V. Transworld Marine Agency CY S.A., naamloze vennootschap, Antwerp, Belgium

Filed Jan. 20, 1982, Ser. No. 340,858
Claims priority, application Belgium, Jan. 20, 1981, 2/58962
Int. Cl.³ B66C *1/18*
U.S. Cl. 294—74 **3 Claims**



3. A self-tightening sling for unit loads of bagged material, comprising:

distinct bottom and top parts made of webbing, the bottom part having a clover-leaf configuration, said top part having a two-loop configuration, each loop of which being shaped into two sub-loops, when the sling is placed on and around a unit load, each of said sub-loops being tied to a loop of the bottom part by a self-locking sliding knot and including an exposed portion projecting from said knot and forming a hoisting loop, whereby four knots and four hoisting loops are formed.

4,448,452

BOTTLE CARRIER

Prentice J. Wood, Hapeville, Ga., assignor to The Mead Corporation, Dayton, Ohio

Continuation of Ser. No. 269,572, Jun. 2, 1981, abandoned, which is a continuation of Ser. No. 155,146, May 30, 1980, abandoned. This application Aug. 26, 1982, Ser. No. 411,707

Int. Cl.³ B65D *71/00*

U.S. Cl. 294—87.2 **7 Claims**

1. A bottle carrier of the top gripping type for packaging a plurality of bottles having flanged neck portions and arranged in at least one row, said carrier being formed of semi-rigid plastic material and comprising a frame structure, a plurality of collars integrally formed with said frame structure for respectively enveloping the necks of a plurality of bottles, each collar including a plurality of lift tabs of substantially equal length and distributed about the periphery of the associated bottle neck and in upwardly inclined relation with their upper ends in engagement with the flange of the associated bottle throughout a substantial part of the periphery of the bottle neck, and a plurality of stabilizing tabs distributed about the periphery of the associated bottle neck and of substantially equal length and substantially shorter in length than said lift tabs and arranged to engage the neck of the associated bottle at a level substantially below the level of the upper ends of said lift tabs for imparting a gripping force thereto in a lateral and downward direction against the bottle shoulder and which is distributed about the periphery of the neck of the associated bottle, each of said stabilizing tabs being disposed between a pair of lift tabs.

4,448,453

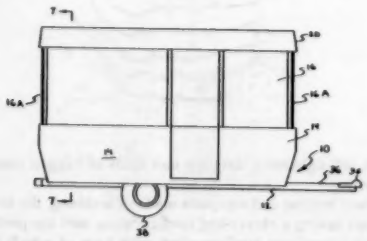
APPARATUS AND METHOD FOR RAISING AND LOWERING BOTH ROOF AND SIDE WALLS OF A RECREATIONAL VEHICLE

John A. Irelan, Elkhart, Ind., and William E. Peterson, Harmony, Minn., assignors to Coachmen Industries, Inc., Middlebury, Ind.

Filed Jul. 6, 1982, Ser. No. 395,609

Int. Cl.³ B60P *3/34*

U.S. Cl. 296—27 **9 Claims**



1. Apparatus for raising and lowering the roof and solid side panels of a recreational vehicle comprising:

a raising and lowering mechanism disposed at the upper interior edge of the roof on opposite sides thereof;

means forming a track extending substantially the length of the interior upper roof edge and at opposite sides of said roof;

oppositely movable gear toothed racks in confronting relation and located for slidable movement within said track means;

power actuating means having a gear wheel associated with the upper and lower racks and in driving relation with each;

an idler sprocket also in geared relation with said racks for insuring simultaneous and coequal movement of said racks and whereby said racks can be power actuated in each of opposite directions relative to each other;

a pivoted lever at each of the four corners of the vehicle and pivotally connected at one end to said vehicle;

means forming an operative connection between the power driven end of each said levers and said power actuating means whereby movement of said gear racks will effect pivoting of each said levers at its pivoted base end with the vehicle to effect selective directional pivotal movement of each such lever;

a pair of solid wall panels forming opposite sides of said vehicle and operatively connected one with each of a pair of complementary levers, whereby said levers pivot the wall panels between a substantially horizontal stored position to a substantially vertical raised position; and,

a compound link associate one with each of said levers and having an articulated connection to a mid portion of its associated lever and further having a pivoted connection at the opposite end thereof with a corner of said roof, the radius of movement of each said levers about its connection with the vehicle and the radius of counter pivotal movement of the associated link about its articulated connection with said lever, causing each roof corner to develop coequal simultaneous rectilinear vertical movement of each corner which moves in unison with the others.

4,448,454

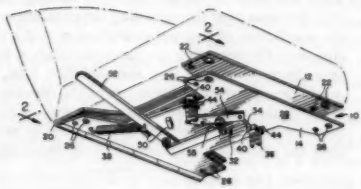
ADJUSTABLE AUTOMOBILE SEAT BRACKET

Wayne A. Scott, R.R. Saunemin, Saunemin, Ill. 61769

Continuation of Ser. No. 55,222, Jul. 5, 1979. This application Jan. 21, 1982, Ser. No. 341,421

Int. Cl.³ A47C *1/02*

U.S. Cl. 297—313 **2 Claims**



1. An adjustable seat bracket for disposition between a seat support surface and a seat mounted within a vehicle, comprising:

top and bottom generally flat support plates pivotally hinged at their rearward edges, said top support plate adapted to be affixed to said seat with said rearward edge of said top support plate in proximity to the rearward edge of the seat and said bottom support plate being adapted to be affixed to said seat support surface within the vehicle;

latch means mounted to and between said top and bottom generally flat support plates for releasably maintaining said support plates and said seat and seat support surface in a desired angular relationship, said latch means being spaced rearwardly of the forward edge of the seat;

said latch means including a slotted catch bar depending from the underside of said top support plate toward said bottom support plate, said bottom plate having a clearance

opening positioned and sized to permit said catch bar to pass therethrough as said support plates are moved toward and away from each other, bolt means movably attached to said bottom support plate on the underside thereof for releasably engaging said slotted catch bar, and stop means on said catch bar and engageable with said bottom support plate to limit the extent of pivotal movement of said seat;

a control lever movably fixed to the underside of said bottom support plate and linked to said bolt means for moving said bolt means into and out of engagement with said slotted catch bar, said control lever including a portion protruding beyond one side edge of said bottom plate to permit ready access to the control lever; and

spring means connected between said control lever and said bottom support plate for biasing said bolt means into engagement with said slotted catch bar.

4,448,455

RELEASABLE AUXILIARY WHEEL COUPLING MECHANISM

Peer Ellegaard, Lundemarken 16, Himmelev, 4000 Roskilde, Denmark

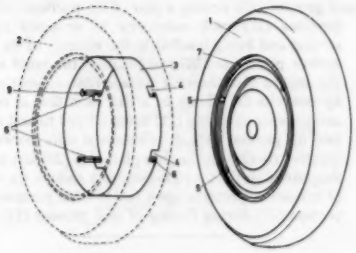
PCT No. PCT/DK81/00012, 371 Date May 13, 1982, 102(e) Date May 13, 1982, PCT Pub. No. WO82/01687, PCT Pub. Date May 27, 1982

PCT Filed Feb. 11, 1981, Ser. No. 380,737

Claims priority, application Denmark, Nov. 20, 1980, 4949/80

Int. Cl.³ B60B *11/00, 15/26*

U.S. Cl. 301—36 R **6 Claims**



6. Apparatus for releasably coupling an auxiliary wheel (2) with the rim of an original wheel (1) of a vehicle, comprising

(a) a cylindrical hollow member (3) having an outer diameter corresponding with the diameter of the original wheel rim, one end of said member being connected with the auxiliary wheel and the other end of said member containing a plurality of circumferentially spaced cutouts;

(b) a plurality of locking cams (5) secured to the original wheel rim in circumferentially spaced relation corresponding with the spacing of said member cutouts, each of said locking cams including a groove; and

(c) a plurality of tightening devices connected with said member in alignment with said cutouts, respectively, said cutouts being adapted to receive said grooved locking cams for releasable interlocking with said tightening devices, respectively, the width of each of said cutouts being such that the lateral surface of the corresponding locking cam abuts the lateral surface of the corresponding cutout when said said tightening device is opposite said corresponding locking cam groove.

4,448,456

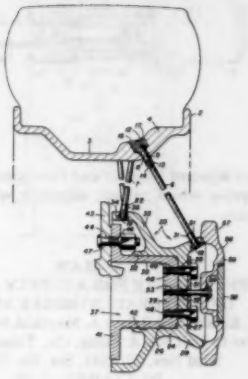
WIRE SPOKE WHEEL HUB ASSEMBLY

Dean W. Pfundstein, 866 Hummingbird Dr., San Jose, Calif. 95125

Filed Mar. 4, 1982, Ser. No. 354,583

Int. Cl.³ B60B *1/04, 27/06*

U.S. Cl. 301—58 **5 Claims**



1. A wire spoke wheel and hub assembly, including an adaptor for mounting the wire spoke wheel on a conventional wheel support plate or brake drum comprising:

(a) a wheel rim;

(b) a hub concentrically disposed with respect to a wheel rim, said hub including a central body portion of relatively small diameter and spoke-anchoring flanges at opposite ends thereof of relatively larger diameter to which a multiplicity of spokes may be anchored, said central body portion including a centrally disposed cylindrical recess closed at one end by an end wall and open at its other end;

(c) a plurality of wire spokes detachably interconnected between the wheel rim and hub to retain the hub coaxially disposed with respect to the wheel rim;

(d) an adaptor including a central cylindrical body portion and a radially extending flange adapted to be detachably secured to a wheel mounting plate by appropriate lug bolts, said central body portion of said adaptor being proportioned to be snugly received in the interior of said central recess formed in the body of said hub; and

(e) means for detachably securing said hub to said adaptor to retain the wheel on a conventional wheel mounting plate or brake drum while functioning to carry torsional loads imposed between said hub and adaptor.

4,448,457

BRAKING PRESSURE CORRECTOR

Pierre Pressaco, La Courneuve, France, assignor to Societe Anonyme DBA, Paris, France

Filed Nov. 2, 1981, Ser. No. 317,088

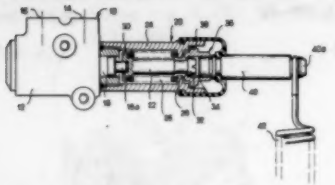
Claims priority, application France, Nov. 28, 1980, 80 25291; Jun. 11, 1981, 81 11497

Int. Cl.³ B60T *8/18*

U.S. Cl. 303—22 R **20 Claims**

1. A vehicle load sensitive braking pressure corrector, comprising a casing, sliding correcting valve means arranged within said casing, a push rod engaging said valve means in the prolongation thereof to bias said valve means in one direction, a preloading spring coupled to said push rod so as to exert on said valve means a biasing force of fixed magnitude and bias the valve means in said one direction, and a control vehicle load-sensing spring coupled to said push rod via a reversing coupling device so as to exert on said valve means a force of a magnitude varying as an inverse function of the vehicle load,

characterized in that said reversing coupling device is hingedly mounted for pivotable movement relative to said casing via a swivel joint and has one end cooperating with said push rod



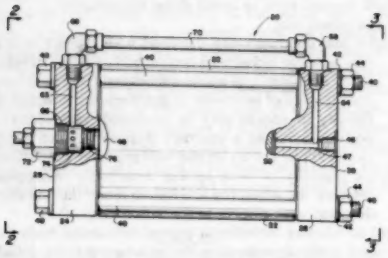
and means adjacent its other end for connection to said load-sensing spring which extends angularly with respect to said valve means.

4,448,458

SHUT-OFF CYLINDER FOR A SUPPLY ACCUMULATOR OF A HYDRAULIC BRAKE SYSTEM

George T. Knothe, and Robert A. Mayfield, both of Tulsa, Okla., assignors to Unit Rig & Equip. Co., Tulsa, Okla.

Filed Nov. 23, 1981, Ser. No. 324,102
Int. Cl.³ B60T *15/46*
U.S. Cl. 303—84 A **5 Claims**



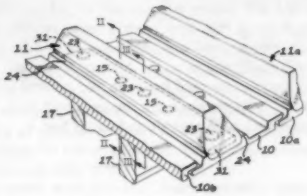
1. An automatic hydraulic shut-off cylinder used in conjunction with a hydraulic braking system of an off-highway vehicle comprising a hollow cylindrical housing, an inlet end cap received in a first open end of said housing, an outlet end cap received in a second open end of said housing, a means for securing the end caps to said housing, said inlet end cap having an inlet port in fluid communication with the interior of said housing and with a source of hydraulic fluid from a common hydraulic reservoir of said braking system, said outlet end cap having an outlet port in fluid communication with said interior of said housing and with an outflow source of hydraulic fluid to said braking system, a piston slidably received in said interior of said housing between said inlet end cap and said outlet end cap, a resilient means positioned between said pison and said outlet end cap to bias the movement of said piston toward said inlet end cap under normal operating conditions, a bypassing means to provide an inflow of hydraulic fluid from said common reservoir to said interior of said housing between said outlet end cap and said piston under start-up conditions, and an openable and closable regulating means when closed preventing flow of fluid through said bypassing means during normal operation of said braking system, and whereby under adverse operating conditions resulting from a failure in said braking system said piston travels toward said outlet end cap until said piston encounters the interior edge of said outlet end cap and stops, thereby preventing a continuous outflow of hydraulic fluid from said common reservoir to said braking system.

4,448,459

ROADABLE TRACK SHOE WITH SEALED GROUSER

Randall L. Kortering, and Danny J. Becker, both of Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US82/00458, 371 Date Apr. 13, 1982, 102(e) Date Apr. 13, 1982, PCT Pub. No. WO83/03583, PCT Pub. Date Oct. 27, 1983
PCT Filed Apr. 13, 1982, Ser. No. 385,416
Int. Cl.³ B62D *55/20, 55/26*
U.S. Cl. 305—38 **4 Claims**



1. In a track shoe (10) having a roadable grouser assembly (11), said grouser assembly (11) extending the length of said shoe (10) and including an elastomeric grouser (12) and an anchor plate (13) bonded to said grouser (12), the improvement comprising:

said track shoe (10) having a pair of laterally-spaced ribs (24), each rib (24) being of a height substantially less than the height of said grouser assembly (11);

said track shoe (10) having a pair of laterally-spaced ribs (24), each rib (24) being of a height substantially less than the height of said grouser assembly (11);

said anchor plate (13) having a flat bearing surface (26) and opposite lateral sides (28), said anchor plate (13) being secureable to said track shoe (10) along said bearing surface (26) at a location between said ribs (24); and

said grouser (12) having a pair of lip portions (27), said lip portions (27) each extending in wrapped relationship around and being bonded to the entirety of its respective anchor plate side (28) and locating the bond edge along the anchor plate bearing surface (26), at least one of said lip portions (27) being of a size such that in response to said grouser assembly (11) being affixed to said track shoe, said lip portion (27) is compressed only between its respective rib (24) and anchor plate side (28) to a preselected magnitude sufficient to measurably reduce the magnitude of stresses subjectable upon said bonded portion of said lip portion (27) during flexing of said grouser (12).

4,448,460

HYDROSTATIC BEARING

Hironori Yamamoto, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 160,173, Jun. 17, 1980, abandoned. This application Mar. 17, 1983, Ser. No. 474,736
Claims priority, application Japan, Jun. 26, 1979, 54-80307
Int. Cl.³ F16C *32/06*
U.S. Cl. 308—5 R **2 Claims**

1. A hydrostatic bearing, comprising:

a first member;

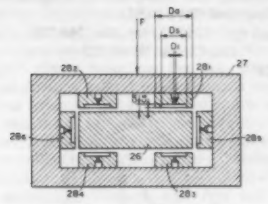
a second member having a surface opposed to a surface of said first member, said first and second members being movable relative to each other;

a protuberance formed at an outer peripheral portion of said first member, said protuberance and said opposing surfaces of said first and second members defining a recess therebetween; and

means, in communication with the recess, defining a plurality of holes for supplying high pressure gas to the recess, wherein when pressurized gas is supplied to the recess the following relationships are satisfied:

λ is in the range of 0.02 to 0.06;

α is in the range of 0.001 to 0.01; and
β is in the range of 0.2 to 0.7 where
$\lambda = (\ln Da/Ds)/(\ln Ds/Di)$
$\alpha = Di/Da$
$\beta = Cs/Cr$



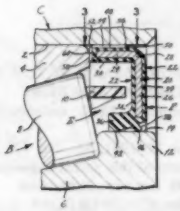
with Da being the diameter of said first member, Ds being the diameter of the recess, Di being the diameter of each of said plurality of holes, Cs being the gap formed between said surface of said second member and said protuberance and Cr being said gap formed between said surface of said second member and the surface of said first member.

4,448,461

SELF-VENTING SEAL

Dennis L. Otto, Malvern, Ohio, assignor to The Timken Company, Canton, Ohio

Filed Mar. 16, 1982, Ser. No. 358,683
Int. Cl.³ F16C *33/76*
U.S. Cl. 308—187.2 **18 Claims**



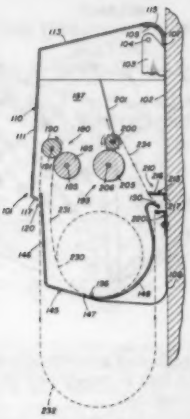
1. In an assembly including a shaft, a housing surrounding the shaft and containing a bearing cavity, a bearing located within the bearing cavity for enabling the housing to rotate relative to the shaft or vice-versa, there further being a bore and a wear surface at the end of the bearing cavity with the wear surface being located generally within the bore, an improved seal for closing the end of the cavity at the bore and wear surface, said seal comprising: a retaining band fitted into snug-fitting contact with the wall of the bore such that it does not rotate relative to the bore and having radially outwardly opening channels which communicate with the bearing cavity and means which normally bear against and contact the wall of the bore to close the channels but will separate from the wall of the bore and open the channels in response to a slight increase in pressure within the bearing cavity so as to expose the channels to the ambient atmosphere, whereby the bearing cavity is vented; a seal lip contacting the wear surface and forming a barrier to the passage of fluid along the wear surface while the wear surface moves relative to the lip or vice-versa; and an impervious intermediate member extending between the retaining band and the lip.

4,448,462

TOWEL DISPENSER

Randel P. Smith, Chicago, Ill., assignor to Steiner Corporation, Salt Lake City, Utah

Filed Aug. 20, 1980, Ser. No. 179,652
Int. Cl.³ B65H *19/00*
U.S. Cl. 312—38 **24 Claims**



22. A towel dispenser of the continuous loop type, comprising a housing having associated therewith a loop of towel that extends along an exit path from a clean towel supply within the housing to an exposed position accessible to a user and thence along a return path into the housing, said housing including a rear wall adapted to be mounted on a support surface and a cover having a front with the bottom edge thereof above the bottom edge of said rear wall and two sides removably mounted on said rear wall, two spaced apart and vertically extending support members mounted on said rear wall, each support member having a cantilever portion with mounting mechanism, a towel bed mounted to said mounting mechanism on the cantilever portions of said support members movable between a dispensing configuration wherein said towel bed is in the closed position thereof and a loading configuration wherein said towel bed extends outwardly from said housing to facilitate the loading of clean towel thereinto, two end pieces each removably mounted on a respective one of said support members to cover the ends of said towel bed, towel dispensing mechanism mounted in said housing for dispensing clean towel therefrom into the loop along the exit path when the accessible portion of the loop is pulled by the user, loop take-up mechanism mounted in said housing coupled to said towel dispensing mechanism for retracting and storing soiled towel from the return path, and movable and adjustable tension control mechanism for adjusting the tension in the soiled towel retracted and stored by said loop take-up mechanism to vary the amount of soiled towel taken up during operation of said loop take-up mechanism to control the amount of towel in the loop.

4,448,463

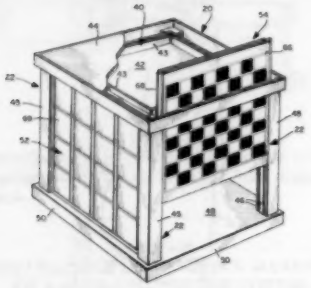
FURNITURE ASSEMBLY FOR STORAGE OF ARTICLES

Paul E. Amos, 1132 Pennsylvania Ave., McKeesport, Pa. 15131

Filed Mar. 26, 1982, Ser. No. 362,504
Int. Cl.³ A47B *43/00, 77/18*
U.S. Cl. 312—111 **19 Claims**

1. A storage assembly for the storage of articles comprising:
(a) a top member having an outer frame of polygonal shape, including a vertical wall;
(b) an inner frame of polygonal shape, including a vertical wall within, and spaced from said outer frame;

(c) means for connecting said inner and outer frames, and providing elongated spaces of uniform width between the walls thereof;
(d) supporting legs connected to and extending downwardly from the corner portions of said inner and outer frames;
(e) the opposed faces of each of said supporting legs being provided with side retaining means;



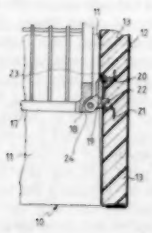
(f) side members positioned between opposed faces of said support legs and held in engagement therewith by said side retaining means, and
(g) said side members being inserted into, positioned in the assembly, and removed therefrom, through the elongated spaces between the walls of the inner and outer frames.

4,448,464

COOLING APPLIANCE, ESPECIALLY A HOUSEHOLD REFRIGERATOR OR THE LIKE

Rudolf Reichert, and Theo Haftlmeier, both of Giengen, Fed. Rep. of Germany, assignors to Bosch-Siemens Hausgeräte, Stuttgart, Fed. Rep. of Germany

Filed Feb. 2, 1982, Ser. No. 344,926
Claims priority, application Fed. Rep. of Germany, Feb. 5, 1981, 3104012
Int. Cl.³ F25D *11/00*
U.S. Cl. 312—214 **9 Claims**



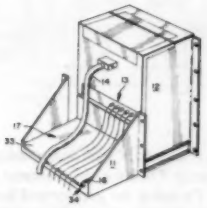
1. Cooling appliance, comprising a housing having an opening formed therein, a solid outer layer, an inner lining having a surface facing said outer layer, and hard synthetic foam being foamed in situ between said inner lining and outer layer, at least one lockable door covering said opening, a mounting rail being embedded in said synthetic foam on said surface of said inner lining, at least one first bearing part fixed on said mounting rail in vicinity of said opening, at least one second bearing part being movably disposed on said at least one first bearing part, and at least one supporting tray being disposed in said housing and having a given region being disposed on said at least one second bearing part, said supporting tray having a curved portion opposite said given region for permitting said tray to be at least partly swung out of said housing with said door open.

4,448,465

ELECTRICAL CABLE PROTECTOR

Thomas H. Yonenaka, San Jose, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Apr. 2, 1982, Ser. No. 364,730
Int. Cl.³ A47B *88/00*
U.S. Cl. 312—223 **3 Claims**



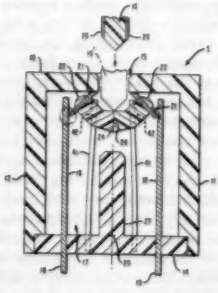
1. Protection apparatus for electrical cables that extend from the back of a drawer when the drawer is sliding between open and closed position with respect to a framework thereof, comprising:
an apron of sheet material secured to said drawer said drawer and said cables when said drawer is opened and closed, said apron extending from said back of said drawer beneath said cables and being draped downwardly between said cables and said framework, so as to remain in frictional contact with said framework during said sliding, thus to avoid abrasion of said cables by said framework upon opening and closing and pinching of said cables between said drawer and framework upon closing of said drawer.

4,448,466

LOW INSERTION FORCE CONNECTOR FOR PRINTED CIRCUIT BOARDS

Warren W. Porter, Escondido, Calif., assignor to NCR Corporation, Dayton, Ohio

Filed Nov. 12, 1981, Ser. No. 320,280
The portion of the term of this patent subsequent to Oct. 26, 1999, has been disclaimed.
Int. Cl.³ H01R *23/68*
U.S. Cl. 339—17 M **5 Claims**



1. An electrical connector for connecting to an edge contact of a printed circuit board or the like comprising:
(a) a housing having a longitudinal slot for receiving an edge of a printed circuit board;

(b) a pin made of an electrically conductive resilient material;

(c) interconnection means for operatively connecting said pin to said edge contact, said inteconnection means rotatably positioned within said housing and actuated by an insertion of the printed circuit board or the like, said interconnection means being configured to have two ends such that the first end of said interconnection means makes a first contact point with said edge contact when said interconnection means is actuated by the insertion of said printed circuit board or the like, said interconnection means rotating as said printed circuit board or the like is further inserted, and the second end of said interconnection means makes a second contact point with said pin, the second end of said interconnection means causing said pin to be deflected as a result of the rotating motion of said interconnection means, said deflection causing a force to be transmitted through said first and second contact points, thereby permitting a piercing action to occur at said first and second contact points; and

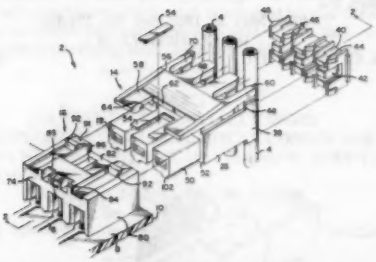
(d) means for applying a force to said interconnection means to return said interconnection means to an unrotated position, said means for applying being effectively inoperative when the printed circuit board or the like is acting in concert with said electrical connector.

4,448,467

CONNECTOR ASSEMBLY HAVING COMPACT KEYING AND LATCHING SYSTEM

Charles H. Weidler, Lancaster, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Sep. 2, 1982, Ser. No. 414,160
Int. Cl.³ H05K *1/00*; H01R *13/62*
U.S. Cl. 339—17 LC **8 Claims**



1. An electrical connector assembly of the type comprising first and second connector housings, each of the housings having a mating face and a rearward face which faces oppositely with respect to the mating face, external housing walls extending from the mating face to the rearward face, the external walls comprising oppositely facing sidewalls and oppositely facing endwalls, terminals in the housings which are coupled to each other when the housings are mated with each other, a latch arm on one of the external housing walls of the first housing, the latch arm being hinged to the one housing wall and having a forward portion which extends towards the mating face and a rearward portion which extends towards the rearward face, and forward portion having latching shoulder means thereon for cooperation with complementary latching shoulder means on the second housing, and a keying system on the housings for keying the housings to each other, the connector assembly being characterized in that:

the keying system comprises at least one removable key on the first housing and a keyway in the second housing, the key extending parallel to, and being adjacent to, the one external wall of the first housing, the key being substantially coextensive with the forward portion of the latch arm and the key being between the forward portion of the latch arm and the one external wall of the first housing,

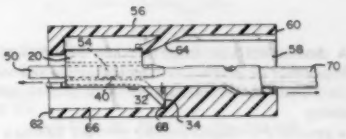
the forward portion of the latch arm having an inspection opening therein to permit determination of the presence or absence of the removable key whereby, the first and second housings can be keyed to each other by removing the key from the first housing and placing a key plug in the keyway of the second housing.

4,448,468

RECEPTACLE TERMINAL HAVING LATCHING FEATURE

Daniel R. Coldren, Enola, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Jul. 9, 1982, Ser. No. 396,973
Int. Cl.³ H01R *13/635*
U.S. Cl. 339—74 R **7 Claims**



1. A stamped and formed receptacle terminal of the type having a receptacle portion which is dimensioned to receive a tab type terminal, the receptacle portion having a web and having sidewalls extending from the marginal side portions of the web, the sidewalls having portions which extend inwardly over the web and towards each other and having free edges which are spaced from the surface of the web, the receptacle portion having a tab receiving end and an inner end whereby upon relative movement of the tab into the tab receiving end towards the inner end, electrical contact is established between the tab and the receptacle portion, the receptacle portion having a releasable latch for releasably latching the tab to the receptacle portion, the receptacle portion being characterized in that:

the releasable latch comprises a latching tongue struck from the web of the receptacle portion, the web having an opening therein which was produced when the tongue was struck from the web, the tongue having a fixed end, a free end, and said edges extending between the ends and alongside the marginal side portions of the web, the fixed end being proximate to one of the ends of the receptacle portion and the free end being proximate to the other end of the receptacle portion,

the tongue having an intermediate portion which extends from the fixed end obliquely with respect to the plane of the web towards the free edges of the sidewalls, an engaging ear extending from the intermediate portion to the free end, the engaging ear extending away from the free edges of the sidewalls and through the opening in the web whereby the free end of the tongue can be engaged,

the web having stop portions which are proximate to the side edges of the tongue intermediate the ends of the tongue, the stop portions extending beneath the tongue and into the opening in the web, the tongue extending between the stop portions and the free edges of the sidewalls thereby to prevent overstressing of the tongue during flexure thereof, and latching portions on the tongue which are engageable with complementary latching portions on the tab when the tab is inserted into the receptacle portion thereby to latch the tab to the receptacle portion whereby,

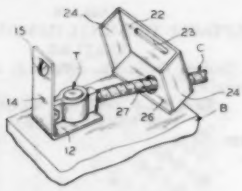
the tongue can be disengaged from the tab by engaging the engaging portion of the tongue and flexing the tongue away from the free edges of the sidewalls until the latching portions of the tongue are disengaged from the complementary latching portions of the tab.

4,448,469

BATTERY SECURING DEVICE

Romain Metzger, 408 Pleasant Run Dr., Wheeling, Ill. 60090

Filed May 20, 1982, Ser. No. 380,138
Int. Cl.³ H01R *13/639*
U.S. Cl. 339—82 **6 Claims**



1. A device for preventing the theft of a battery from a vehicle or other location by eliminating access to a connection between a cable and a terminal post of the battery, said device comprising:

(a) a generally L-shaped locking member having a pair of angularly related arms;

(i) one of said arms being adapted to extend into a related cover member and be secured to a battery terminal post under the end of a battery cable which is also attached to said battery terminal post;

(ii) the other of said arms being adapted to be connected to said cover member by a padlock;

(iii) said arms containing separate openings for attachment to said battery terminal post said padlock, respectively

(b) a cover member adapted to shroud a connection between a battery terminal post, a cable, and said locking member and having:

(i) a first opening for receiving a portion of said battery cable;

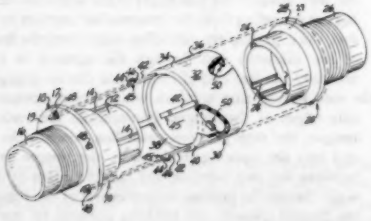
(ii) a second opening for receiving said one arm of said locking member.

4,448,470

COUPLING MEMBER AND AN ELECTRICAL CONNECTOR

Ann E. Peterson, Sidney, N.Y., assignor to The Bendix Corporation, Southfield, Mich.

Filed Dec. 28, 1981, Ser. No. 334,868
Int. Cl.³ H01R *13/62*
U.S. Cl. 339—91 R **6 Claims**



1. An assembly comprising a coupling member (**30**) and a pair of housings (**10, 20**), each said housing having a forward end portion (**12, 22**), a rear end portion (**16, 26**) and at least one electrical contact (**11, 21**) mounted therein, the forward end portion and the contact of one said housing (**10**) and the forward end portion and the contact in the other said housing (**20**) being disposed in mated relation, the coupling member being disposed around the forward end portions (**12, 22**) and having a rearward portion (**36**) and a forward portion (**34**), the assembly being characterized by:

at least one resilient finger (**42**) extending axially from the forward portion (**34**) of said coupling member (**30**), said finger being radially deflectable inwardly and outwardly relative to the electrical connector central axis and including a transverse abutment shoulder (**46**);

at least one resilient tab (**50**) extending from the rearward portion (**36**) of said coupling member (**30**), said tab extending radially inwardly towards the central axis;

means (**18, 48**) on said one connector housing for retaining the abutment shoulder (**46**) and receiving the finger (**42**), said retaining means comprising said one connector housing (**10**) including a first radial flange (**18**) having an opening (**48**) disposed therein; and

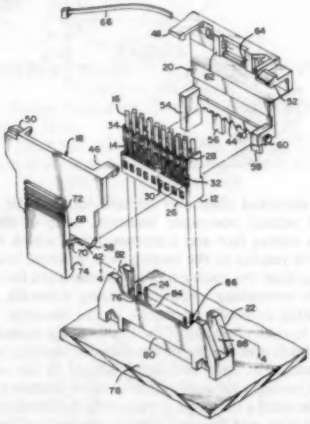
means (**28**) on the other connector housing (**20**) for receiving the tab (**50**), said receiving means comprising said other connector housing (**20**) including a second radial flange (**28**) having an outer diameter slightly less than the inner diameter of the coupling member (**30**) to allow the tab (**50**) to be received thereover, said finger (**42**) being sized to pass through said opening (**48**) to allow the abutment shoulder (**46**) to engage the first radial flange (**18**), said finger (**42**) securing the coupling member to said one connector housing and said tab (**50**) securing the coupling member to said other connector housing whereby said connector housings (**10, 20**) are coupled and secured together.

4,448,471

POLARIZED LOCKING LATCH COVER FOR AN ELECTRICAL CONNECTOR

Donald A. Berry, Elizabethtown, and David J. Fabian, Harrisburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed May 20, 1982, Ser. No. 379,836
Int. Cl.³ H01R *13/58*
U.S. Cl. 339—91 R **1 Claim**



1. In combination with an electrical connector having an elongated housing of rigid insulative material with a plurality of terminal passages extending from a rear portion through said housing to open on a front mating face, each passage being fully enclosed toward the mating face and having an outwardly directed, open channel shape toward the rear portion remote from said mating face, a plurality of terminals each mounted in a respective one of said passages with each terminal having a forwardly directed mating portion lying in said fully enclosed portion of said passage and an insulation displacing conductor engaging rear portion lying in and accessible

from said rear channel shaped portion, a pair of mating cover members comprising:

a first cover member having a forward edge receivable against a first side of said housing with a plurality of tines extending from said forward edge and received in said fully enclosed portions of respective passages to hold said first cover member in assembly therewith and an opposite spaced rear edge having at least one latching leg extending normal to the plane of said first cover member and at least one latching shoulder;

a second cover member having a forward edge receivable against a second opposite side of said housing with a plurality of tines extending from said forward edge and received in said fully enclosed portions of respective passages to hold said second cover member in assembly therewith and an opposite spaced rear edge having at least one latching leg extending normal to the plane of said second cover member and at least one latching shoulder, each said leg of one cover member being positioned to engage a shoulder of the other cover member;

keying means extending in cantilever fashion forwardly of a respective forward edge of one of said cover members parallel to and spaced from said tines to overlie said housing, the free end of said keying means being coplanar with said mating face;

at least one end wall depending from an end of one of said cover members and extending normal to the plane of said cover member to substantially enclose an end portion of said housing forming a keying/polarization profile therefore;

means on one of said cover members to latchingly engage a mating connector member;

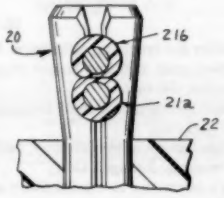
at least one U-shaped member integral with an inner surface of one of said cover members forming a belt loop configuration, and tie means passing through each said U-shaped member and about conductors terminated by said connector to secure said conductors to said one of said cover members providing strain relief for said conductors.

4,448,472

SLOTTED, SUBSTANTIALLY RIGID MULTI-CONDUCTOR ELECTRICAL CONNECTOR

Edwin C. Hardesty, Perry Hall, Md., assignor to AT&T Technologies, Inc., New York, N.Y.

Filed Sep. 16, 1981, Ser. No. 302,865
Int. Cl.³ H01R 9/08
U.S. Cl. 339—97 P **10 Claims**



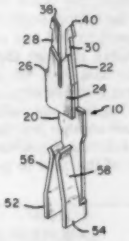
1. A contact element for establishing an electrical connection between conductive elements of at least two insulated conductors with the conductive elements each having a diameter that falls in a predetermined range, said contact element comprising an open-ended substantially linear tubular member which is made of an electrically conductive material having a relatively high modulus of elasticity, which has an inner diameter that is less than twice the outer diameter of the smallest insulated conductor to be connected by said contact element and an outer diameter, and which has a thickness that is less than the minimum diameter of conductive elements in the predetermined range and that is relatively large with respect to said inner diameter of said tubular member, said tubular member including surfaces that define a longitudinal slot which is formed through a wall thereof from one end of said tubular member to the other for receiving one or more of the insulated conductors, which is parallel to a longitudinal axis of said tubular member and which has a width that is less than the minimum diameter of the predetermined range, further said tubular member at one end including a peripheral edge having at least a portion thereof which is diametrically opposite to said slot provided with a cutting edge which serves conductors that are moved into said slot and that extend past said peripheral edge, and said slot being configured and said tubular member having sufficient stiffness to cause at least portions of said surfaces which define said slot to nick the conductive elements of insulated conductors that are moved into and along said slot with any accompanying deflection of said surfaces being substantially negligible.

4,448,473

LATCHING SLOTTED BEAM TERMINAL

Ronald G. Felix, Harrisburg, and Douglas R. Hoffman, Hummelstown, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 31, 1982, Ser. No. 364,169
Int. Cl.³ H01R 11/20
U.S. Cl. 339—99 R **6 Claims**



1. A stamped and formed electrical terminal for forming an electrical connection with an insulated conductor and having a conductor engaging portion and a mating portion extending from opposite ends of a main body, said conductor engaging portion having a pair of closely spaced parallel substantially planar plate sections connected by a bight extending along corresponding first sides of the plate sections, each plate section having a pair of spaced apart arms extending from second corresponding sides of said plate sections, said main body being connected to a third side of at least one of said plate sections characterized by the arms of one said plate section being of a first set of dimensions of width and length to define therebetween a slot narrower than the conductor with the arms being stiff and unyielding to deflection in the plane of said one plate section and the arms of the second plate section being of width and length dimensions to be of greater length than said arms of said one plate section and defining therebetween a slot wider than the conductor to be resilient and more capable of deflection in the plane of said second plate than the arms of said one plate section, and

said second arms having outwardly directed latching shoulders adjacent the free ends thereof.

4,448,474

STRAIN RELIEF DEVICE

Walter Melnychenko, Apalachin, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

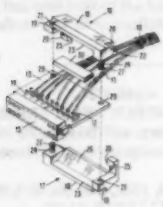
Filed Apr. 5, 1982, Ser. No. 365,414
Int. Cl.³ H01R 13/58
U.S. Cl. 339—103 M **6 Claims**

1. In a printed circuit card assembly having a plurality of electrical terminals thereon electrically connected respectively

to the ends of a plurality of wire conductors carried in a cable and a pin hole located in each corner at one end of the card, a strain relief device for the wire conductors comprising:

a pair of identically configured elongated clamp members each of which has a locking pin and a hook element projecting from the bottom surface thereof and a wire conductor receiving cavity in said bottom surface, and a hook latching recess and a hole recess in the top surface thereof with a pin hole through said hole recess,

one of said members being positioned across the top surface of the card with its locking pin extending through one of



said card pin holes and bottom surface cavity receiving said wire conductors, the other of said members being positioned across the bottom surface of the card and being inverted with respect to said one member and having its locking pin extending through the other card pin hole whereby said members may be snapped together into locking engagement with one portion of said wire conductors being retained against one surface of the card by one of said members and another portion of said wire conductors being clamped directly between said members beyond the pin hole edge of the card to provide effective strain relief.

4,448,475

METHOD AND APPARATUS FOR TREATMENT OF TINNED METAL SURFACES AND TREATED TINNED METAL SURFACE

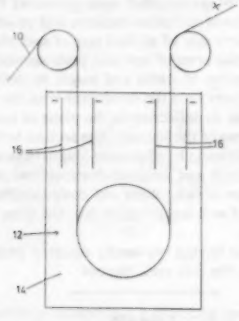
David Reznick, 21 Rehov Raanan, Haifa, Israel

Filed Jan. 13, 1982, Ser. No. 339,150

Claims priority, application Israel, Jul. 7, 1981, 63243

Int. Cl.³ C25F *1/00*

U.S. Cl. 204—140 **12 Claims**



1. A method of anodically treating a tinned metal surface prior to coating with an organic coating so as to increase the long-term adhesion of the organic coating to the surface comprising the steps of:

placing said surface in an electrolyte bath wherein said electrolyte comprises one or more of the following substances:

tap water, dilute nitrate salts of concentration approximately 0.2%, dilute hydrochloric acid, dilute nitrite salts, dilute sulfuric acid, dilute nitric acid of concentration approximately 0.1%, wherein the electrolyte has a pH of approximately 2.5, maintaining said tinned metal surface at a relatively positive voltage, maintaining said electrolyte at a relatively negative voltage, and passing a current of between 3 and 5 amperes per square decimeter of metal surface to be treated through said surface for up to a few seconds, and wherein cathodic treatment of the surface does not follow the foregoing steps.

4,448,476

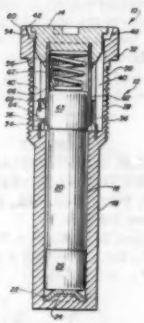
FUSE HOLDER

Stanley Perlman, Park Forest, Ill.; William G. Herbert, Goodland, Ind.; Donald Layton, Kentland, Ind., and James S. Hanafee, Rensselaer, Ind., assignors to Permonite Mfg. Co., Morocco, Ind.

Filed May 11, 1982, Ser. No. 377,062

Int. Cl.³ H01H *85/22, 85/16*; H01R *13/625*

U.S. Cl. 339—203 **10 Claims**



1. A fuse holder for receiving cylindrical fuses of the type having conductive ends, said fuse holder comprising:

a body to receive the fuse;

a first contact disposed in said body to conductively engage one end of said fuse;

a second contact disposed in said body, said second contact having at least one J-shaped slot;

a cap having a connector to conductively engage the other end of said fuse, said connector having a tab received in each slot and conductively engaged between the fuse and the second contact with the connector and second contact in a first position;

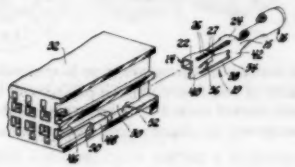
a conductive protrusion interposed between said connector and said second contact to maintain sliding contact between the connector and the second contact in the event said connector and second contact are moved relative to each other and away from said first position without relative rotation so that the tab disengages said second contact; and

a biasing means between said connector and said second contact to maintain the tabs in said slots and against said second contact, forming a bayonet connection therebetween.

4,448,477
ELECTRIC SOCKET TERMINAL

Joseph H. Gladd, Cortland; Robert G. Plyler, Vienna, and Lyle B. Suverison, Fowler, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 19, 1982, Ser. No. 359,686
Int. Cl.³ H01R 11/22
U.S. Cl. 339—258 RR **3 Claims**

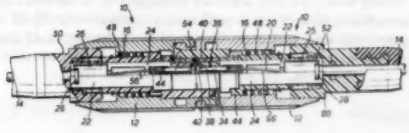


1. An electric socket terminal comprising:
an elongated, resilient socket having two axially spaced split tubes joined by a circumferential array of juxtaposed spring strips,
means beside the elongated, resilient socket for retaining the electric socket terminal in a cavity of an insulator block or the like,
said means including a U-shaped guard extending outwardly of the resilient socket and a resilient latch tang,
said U-shaped guard having axially spaced legs which are integrally attached to the respective split tubes of the resilient socket, and
said resilient latch tang being integrally attached at one end to one of the legs of the U-shaped guard and extending generally axially of the elongated, resilient socket.

4,448,478
FIBER OPTIC CONNECTOR

Maurice A. Matthews, Basingstoke; Michael J. Cook, Thatcham, and David E. Ivey, Whitchurch, all of England, assignors to International Telephone & Telegraph Corporation, New York, N.Y.

Continuation of Ser. No. 142,341, Apr. 21, 1980, abandoned. This application Oct. 19, 1981, Ser. No. 312,428
Claims priority, application United Kingdom, May 8, 1979, 7915872
Int. Cl.³ G02B 7/26
U.S. Cl. 350—96.21 **4 Claims**

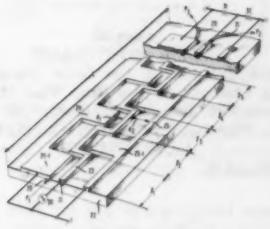


4. An optical fiber connector comprising:
a pair of mating connector elements, each said element comprising:
a body embodying a front end portion having a plurality of axially extending tunnel-like cavities therein;
a ferrule in each said cavity adapted to terminate an optical fiber, each said ferrule having a lens adjacent to its forward end, said ferrules lying in a predetermined pattern;
the forward ends of said ferrules all lying substantially in the same plane, said plane being substantially normal to the longitudinal axes of said ferrules;
a single cover piece of an optically transparent material closing said front end portion of said body, the perimeter of said cover piece surrounding said pattern of ferrules;
the forward ends of said ferrules being positioned close to the inner surface of said transparent cover piece; and
when said connector elements are mated, their transparent cover pieces are close to and parallel to each other with the ferrules in one of said elements optically aligned with the ferrules in the other of the elements, the lenses in the mating ferrules in said connector elements allowing efficient light transmission through the mating connector elements in spite of the separation of the mating ferrules by said cover pieces.

4,448,479
TRAVELING WAVE, ELECTROOPTIC DEVICES WITH EFFECTIVE VELOCITY MATCHING

Rodney C. Alferness, Holmdel, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 16, 1981, Ser. No. 321,475
Int. Cl.³ G02B 5/174
U.S. Cl. 350—96.14 **10 Claims**



1. An optical device comprising:
optical waveguiding means;
electrical waveguiding means extending longitudinally along said optical waveguiding means over an interaction distance L for locally modulating, via the electrooptic effect, the operative parameter of said device;
said electrical waveguiding means having a total length substantially equal to L, and including, at longitudinally spaced interval therealong, means for producing the equivalent of a 180 degree phase shift in said operative parameter, said 180 degree phase shifts occurring at intervals spaced apart a distance, l_0, given by

$$l_0 = \frac{\lambda_{rf}}{2n_{rf}}\left(1 - \frac{V_{rf}}{V_o}\right)^{-1},$$

where λ_{rf}, V_{rf}, n_{rf} are, respectively, the wavelength, velocity of propagation, and refractive index at a specified electrical wave frequency; and V_0 is the velocity of propagation at the frequency of the optical signal of interest.

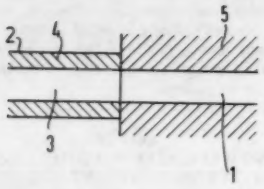
4,448,480
OPTICAL FIBER COUPLER

Hans-Hermann Witte, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 19, 1981, Ser. No. 294,302
Claims priority, application Fed. Rep. of Germany, Sep. 30, 1980, 3036883
Int. Cl.³ G02B 7/26
U.S. Cl. 350—96.15 **10 Claims**

1. A coupler for coupling light signals into and out of light conducting system fibers of a fiber optical system to couple-out and couple-in a light signal to the system fibers, said coupler

comprising at least first, second and third optical coupler fibers for connection to the system fibers, and means for holding said coupler fibers in a plane with the first and second coupler fibers converging together to have a portion of each of said coupler fibers adjacent the end faces extending in parallel side by side



relationship with the end faces being flush and said means for holding positioning at least the third coupler fiber with its end face abutting against the end faces of the first and second coupler fibers with the improvement comprising that each of the coupler fibers having an overall diameter equal to the core diameter of the system fiber which is being connected thereto.

4,448,481

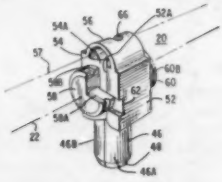
FIBER OPTIC CLAMP

Emma Basov, Des Plaines; Igor Grois, Lincolnwood; Mark Margolin, Chicago, and Alan Berg, Wood Dale, all of Ill., assignors to TRW Inc., Redondo Beach, Calif.

Filed Jun. 22, 1981, Ser. No. 275,846

Int. Cl.³ G02B 7/26

U.S. Cl. 350—96.20 **18 Claims**



10. An optical fiber clamp comprising a pair only of elongate clamping portions having clamping ends, clamping surfaces adjacent said clamping ends, distal ends, and a flexible hinge portion integrally joining said clamping ends of said clamping portions and defining a hinge axis, whereby said clamp may be folded at said hinge portion by essentially relative rotation of said clamping portions substantially about said hinge axis into a fiber clamping configuration wherein said clamping portions are situated side-by-side with said clamping surfaces disposed in confronting clamping relation to one another to clamp an optical fiber between said surfaces with the fiber extending transverse to said clamping portions and with said distal ends disposed side-by-side with their adjacent sides in contact to permit retention of said clamp in said clamping configuration by exerting external forces on said distal ends only to retain said distal ends in contact.

4,448,482

VARIABLE GEOMETRY OPTICAL FIBER CONNECTOR

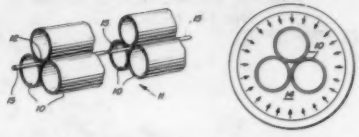
Richard A. Lathlaen, Thousand Oaks, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Continuation of Ser. No. 149,888, May 14, 1980, abandoned. This application Aug. 11, 1982, Ser. No. 407,192

Int. Cl.³ G02B 7/26

U.S. Cl. 350—96.21 **32 Claims**

1. A connector for use in effecting optical signal transmissive connections between the ends of optical fibers comprising an elastomeric body having a thin-walled, fiber-receiving passageway therein; said body also having means surrounding and formed integrally with the passageway thin walls for bending



the thin walls of said passageway so as to shrink the cross-sectional area of said fiber-receiving passageway by bending the thin walls thereof inwardly, whereby optical fibers disposed in said passageway are aligned along a common longitudinal axis.

4,448,483

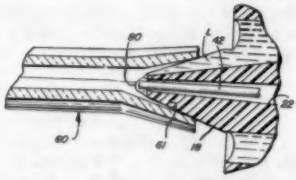
OPTICAL FIBER CONNECTORS WITH AUTOMATIC SUPPLY OF INDEX MATCHING FLUID AND RESERVOIRS FOR SAME

James F. Ryley, Jr., Voorhees, N.J., assignor to TRW Inc., Redondo Beach, Calif.

Filed Aug. 20, 1981, Ser. No. 294,693

Int. Cl.³ G02B 7/26

U.S. Cl. 350—96.21 **23 Claims**



9. A combination comprising a guide containing a capillary passageway for receiving and aligning the ends of optical fibers in light transmissive relation; a reservoir for supplying liquid to said capillary passageway having a well for containing the liquid; said guide and reservoir being formed for interengagement and said reservoir including capillary means communicating said well and capillary passageway in the interengaged condition of said guide and reservoir, whereby liquid in said reservoir well proceeds from said well through said capillary means to said guide capillary passageway.

4,448,484

OPTICAL FIBER ELEMENT WITH THREE LAYER PROTECTIVE COVERING

Aurelio Lombardi, Monza, and Elio Occhini, Milan, both of Italy, assignors to Societa Cavi Pirelli S.p.A., Milan, Italy

Filed Mar. 31, 1982, Ser. No. 364,187

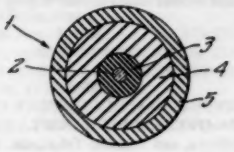
Claims priority, application Italy, Apr. 2, 1981, 20895 A/81

Int. Cl.³ G02B 5/14

U.S. Cl. 350—96.23 **12 Claims**

1. An optical fiber element for a communication cable comprising an optical fiber and three layers of plastomeric or elastomeric material surrounding said fiber along its length, a first one of said layers surrounding and being in contact with said fiber, a second one of said layers surrounding and being in contact with said first layer and a third one of said layers

surrounding and being in contact with said second layer and said second layer having a modulus of elasticity less than the



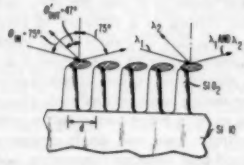
modulus of elasticity of said first layer and said third layer and having a modulus of elasticity less than one Kilogram per mm^2.

4,448,485

HARMONIC GENERATION USING A SURFACE OF METAL PARTICLES

John G. Bergman, Rumson; Paul F. Liao, Fair Haven, and Alexander J. Wokaun, Highlands, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jul. 10, 1981, Ser. No. 284,609
Int. Cl.³ G02B *5/18*
U.S. Cl. 350—162.2 **11 Claims**



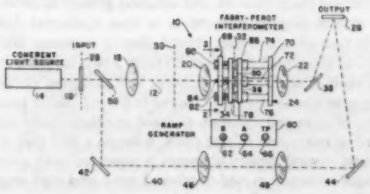
1. A device for generating second harmonic radiation from an input fundamental beam comprising an insulating substrate surface covered with metal particles characterized in that said metal particles are arranged in an ordered array of rows and columns, wherein said rows are separated by a spacing d that is less than one-half of the wavelength of the fundamental beam and greater than one-half of the wavelength of the second harmonic radiation.

4,448,486

VARYING BANDPASS OF OPTICAL SPATIAL FILTER BY ROTATING MIRRORS HAVING CHANGING REFLECTIVITY

David W. Evans, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 6, 1982, Ser. No. 337,350
Int. Cl.³ G02B *5/28*; G01B *9/02*
U.S. Cl. 350—162.12 **5 Claims**



1. In a system of real-time coherent optical filtering of visual imagery having a Fabry-Perot interferometer placed in an intermediate image plane of said system for use as a variable bandpass spatial filter, the improvement which comprises:

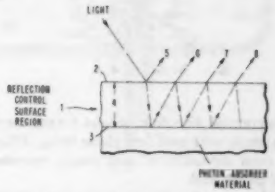
a pair of mirrors mounted in generally spaced, parallel relationship to one another in said interferometer for rotation about a common axis and each having a reflectivity value which changes as a function of rotation, whereby the bandwidth of said interferometer in acting as a spatial filter can be adjusted by merely rotating one or both of said mirrors.

4,448,487

PHOTON ENERGY CONVERSION

Jerome J. Cuomo, New York; Thomas H. DiStefano, Bronxville, and Jerry M. Woodall, Mt. Kisco, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 723,857, Sep. 16, 1976, abandoned. This application May 29, 1979, Ser. No. 43,398
Int. Cl.³ G02B *1/10*
U.S. Cl. 350—164 **7 Claims**



1. A photothermal absorbing member comprising a body of photon absorbing material with an index of refraction and an extinction coefficient for light impinging thereon and having;

a surface contour insuring multiple reflections of incident light;

a contour conforming reflection control region material with an index of refraction of light at a particular wavelength impinging thereon covering said body and positioned between said photon absorbing material and a source of incident light;

said photon absorbing material exhibiting a first reflectivity at said particular wavelength of light;

said reflection control region exhibiting a second reflectivity at said particular wavelength of light; and

the magnitude of said index of refraction of the material of said body, the index of refraction of said reflection control region material at said particular wavelength of light and the extinction coefficient of said body at said particular wavelength of light being such that said first reflectivity of said material and said second reflectivity of said reflection control region are equal within a variation of the order of 0.05.

4,448,488

TILTING DEVICE FOR USE IN ANTI-GLARE MIRROR

Junichi Nakaho, Ichinomiya, Japan, assignor to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, Japan

Filed Sep. 27, 1982, Ser. No. 424,497
Claims priority, application Japan, Feb. 19, 1982, 57-23462[U]
Int. Cl.³ G02B *17/00*; F16C *1/10*
U.S. Cl. 350—278 **5 Claims**

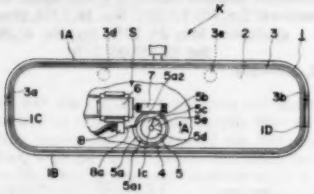
1. A tilting device for use in an anti-glare mirror including a prism mirror, a plate for holding said prism mirror fixedly secured thereto, and a casing, with the plate being accommodated in said casing together with said prism mirror, said tilting device arranged to support said plate such that said plate is tiltable together with said prism mirror in a forward direction and in a rearward direction of said casing about a horizontal rotational axis in said casing and comprising:

a contact projection which is mounted at a predetermined position on a rear face of said plate such that the predetermined position is disposed above or below said horizontal rotational axis;

a spring for urging said plate and said prism mirror about the horizontal rotational axis;

a rotary member having a cam face formed on one face thereof, which is rotatably provided at a position in said casing so as to confront said contact projection such that said contact projection is brought into sliding contact with said cam face with said one face extending in a radial direction of said rotary member;

said cam face comprising a first plane, a second plane, and a spirally inclined face interposed between said first plane and said second plane such that said first plane, said spirally inclined face and said second plane are arranged in a



circumferential direction of said rotary member so as to form a circle with said first plane being different, in level, in an axial direction of said rotary member, from said second plane; and

a reversible motor for driving said rotary member, which is provided in said casing;

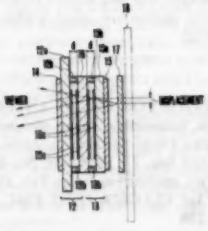
whereby when said rotary member is rotated upon forward rotation or reverse rotation of said reversible motor, said contact projection is selectively brought into pressure contact with said first plane and said second plane such that said prism mirror is changed over to either one of two positions in the forward direction and in the rearward direction of said casing.

4,448,489

WIDE ANGLE LIQUID CRYSTAL DISPLAY THAT COPES WITH INTERFERENCE COLORING

Yukihiro Sato, and Yoshimichi Shibuya, both of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 17, 1982, Ser. No. 378,745
Claims priority, application Japan, May 22, 1981, 56-76510
Int. Cl.³ G02F 1/133
U.S. Cl. 350—330 **2 Claims**



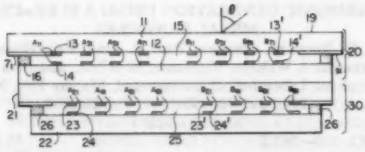
1. A liquid crystal display device assembly comprising:

a first liquid crystal display device including a pair of substrates having electrodes in a dot-matrix pattern and a TN liquid crystal layer sandwiched between said substrates; and a second liquid crystal display device disposed in laminated relation with said first liquid crystal display device and including a pair of substrates having electrodes in a segment pattern and a TN liquid crystal layer sandwiched between said last-mentioned substrates, wherein the product of refractivity anisotropy Δn and thickness d of the liquid crystal layer of said first liquid crystal display device is smaller than 0.6 μm, and the product of refractivity anisotropy Δn and thickness d of the liquid crystal layer of said second liquid crystal display device is 0.6 μm or more.

4,448,490

LIQUID CRYSTAL MATRIX DISPLAY CELLS PILED WITH NON-OVERLAPPING DISPLAY ELEMENTS

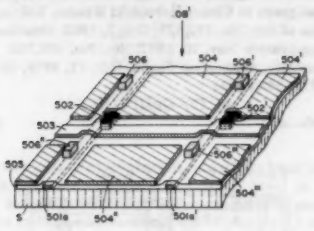
Yoshimichi Shibuya, and Masami Takahashi, both of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 12, 1981, Ser. No. 233,867
Claims priority, application Japan, Apr. 23, 1980, 55-52969
Int. Cl.³ G02F 1/33
U.S. Cl. 350—335 **7 Claims**

3. A liquid crystal display device having a plurality of display sections arranged in at least one row, each of said display sections being formed of a plurality of common electrodes divided into a plurality of groups and a plurality of segment electrodes corresponding to said common electrodes and divided into a plurality of groups, common electrodes included in the corresponding common electrode groups in said plurality of display sections being connected in common to a single common electrode lead, said single common electrode lead including plural lead sections connecting said common electrode and also said display sections, segment electrodes included in each segment electrode group in respective ones of said display sections being connected to a single segment electrode lead, said single segment electrode lead including plural lead sections connecting said segment electrodes, wherein said liquid crystal display device includes a plurality of liquid crystal display elements piled in the direction perpendicular to a display surface of said liquid crystal display device, each of said liquid crystal display elements comprising first and second transparent substrates arranged opposite to each other, a liquid crystal material disposed between said first and second substrates, common electrodes belonging to selected groups of said common electrode groups, said common electrodes of said selected groups being formed on an inner surface of said first substrate, segment electrodes corresponding to said common electrodes of said selected groups, said segment electrodes being formed on an inner surface of said second substrate, a power source for selectively applying voltages having predetermined waveforms between said common electrodes of said selected groups and said segment electrodes corresponding to said common electrodes of said selected groups to drive said liquid crystal display element in a time divisional fashion, wherein two of said liquid crystal display elements are provided, said elements being piled to form a two-layer structure, and in each of said display sections, said common electrodes and segment electrodes are arranged to form a matrix having a plurality of rows and columns, and said common electrodes are grouped to every one of said rows, wherein a first one of said first liquid crystal display elements is provided with common electrodes arranged in odd-numbered rows and with segment electrodes corresponding to said common electrodes in said odd-numbered rows, and a second one of said second liquid crystal display elements is provided with common electrodes arranged in even-numbered rows and with segment electrodes corresponding to said common electrodes in said even-numbered rows.

4,448,491
IMAGE DISPLAY APPARATUS

Yukitoshi Okubo, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 5, 1980, Ser. No. 175,524
Claims priority, application Japan, Aug. 8, 1979, 54-101120; Aug. 10, 1979, 54-102485; Sep. 3, 1979, 54-112645; Sep. 6, 1979, 54-114422; Oct. 16, 1979, 54-133407
Int. Cl.³ G02F 1/13
U.S. Cl. 350—344 12 Claims



1. A display apparatus comprising: a first substrate having a driving thin film transistor array including a plurality of gate lines insulated from each other, thin film semiconductors isolated from the gate lines by an insulating layer, source lines contacting said thin film semiconductors and insulated from said gate lines, and drain electrodes contacting said thin film semiconductors and serving as picture elements and a second substrate having a counter electrode film, said substrates facing each other, whereby display by an electro-optical change generated between said two substrates may be performed, and wherein a plurality of separate thin films, each covering only a small portion of the total area of said apparatus, are disposed between the first substrate and the second substrate, and are arranged along at least one of said gate lines and said source lines as spacers formed by forming a film of an insulating material different from said insulating layer on at least one of said first and second substrates and then etching said film of the insulating material to form a plurality of said spacers.

4,448,492
CYCLOALKYL-TYPE ISOTROPIC DYES FOR LIQUID CRYSTAL DISPLAY DEVICES

William A. Huffman, Minneapolis, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 23, 1982, Ser. No. 452,812
Int. Cl.³ G02F 1/13; C09K 3/34
U.S. Cl. 350—346 12 Claims

1. A composition of matter comprising a nematic, smectic or cholesteric liquid crystal material, at least one dichroic dyestuff, and an isotropic dyestuff having the general formula

$$(Y)_n{=}C{=}(X)_m$$

wherein:

Y is independently selected from the group consisting of a 9-anthron-10-ylidene (anthracene-one) group, an indene-1', 3'-dion-2'-ylidene (phthalone) group, or a 4-oxo-2, 5-cyclohexadien-1-ylidene (quinonoid benzene ring) group, provided that when Y is a quinonoid benzene ring, it is substituted with one or two alkyl substituents of about 1 to 20 carbon atoms in the ortho positions relative to the oxygen of the quinonoid benzene ring;

C is independently selected from the group consisting of a cyclopropyl and a cyclobutyl ring;

X is independently selected from the group consisting of Y or an oxygen atom;

n is 1 to 3 when C is a cyclopropyl ring, and 1 to 4 when C is a cyclobutyl ring; and

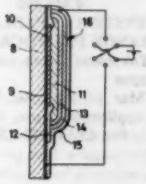
m is 3-n when C is a cyclopropyl ring, and 4-n when C is a cyclobutyl ring,

wherein said isotropic dyestuff has an optical order parameter of about 0.

4,448,493
ELECTROCHROMIC DISPLAY DEVICE

Nagahisa Matsudaira, Tokyo; Kaneki Yoshida, Urawa; Kenzo Fukuyoshi, Tokyo, and Kiyoshi Masui, Asaka, all of Japan, assignors to Toppan Printing Co., Ltd., Japan

Filed Feb. 24, 1982, Ser. No. 351,953
Claims priority, application Japan, Feb. 25, 1981, 56-26358; Jun. 1, 1981, 56-83969; Jun. 8, 1981, 56-87760
Int. Cl.³ G02F 1/01; H01G 9/20
U.S. Cl. 350—357 14 Claims

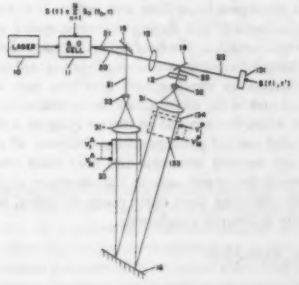


1. An electrochromic display device having at least an electrochromic layer containing a transition metal oxide and a solid proton conductive layer disposed between a transparent electrode and a counter electrode, characterized in that a main component of said solid proton conductive layer is a member selected from the group consisting of titanic acid, stannic acid, antimonic acid, zirconic acid, niobic acid, tantalic acid, silicic acid and mixtures thereof.

4,448,494
ACOUSTO-OPTICAL SIGNAL DETECTOR

Frederick W. Freyre, Wantagh, N.Y., assignor to Hazeltine Corporation, Commack, N.Y.

Filed Jun. 17, 1981, Ser. No. 274,577
Int. Cl.³ G02F 1/11
U.S. Cl. 350—358 8 Claims



1. In an apparatus for detecting frequency components of a signal, said apparatus having:

(a) first means for converting a supplied signal into corresponding acoustic waves propagating through a medium, said first means comprising an acousto-optical cell having a transducer to which the signal is applied and an absorber; and

(b) second means for optically detecting the frequency components of the corresponding acoustic waves, whereby

the frequency components correspond to the components of the signal, said second means comprising:

(1) means for providing coherent light incident on said cell at an acousto-optical angle;

(2) a Fourier Transform element for focusing light diffracted by said cell;

(3) means for focusing undiffracted light from said means for providing; and

(4) means for detecting the frequency difference between the diffracted light focused by said element and the undiffracted light focused by said means for focusing;

the improvement comprising: means for deflecting the undiffracted light incident on said means for detecting thereby controlling the position at which said undiffracted light is incident upon said means for detecting.

4,448,495

ZOOM LENS SYSTEM CAPABLE OF VERY CLOSE RANGE PHOTOGRAPHY

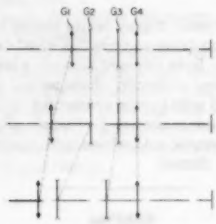
Kiyoshi Hayashi, Yokohama, Japan, assignor to Nippon Kogaku K. K., Tokyo, Japan

Filed Mar. 18, 1982, Ser. No. 359,436

Claims priority, application Japan, Mar. 25, 1981, 56-43486

Int. Cl.³ G02B *15/18*

U.S. Cl. 350—428 **7 Claims**



1. A zoom lens system capable of very close range photography and comprising, in succession from the object side, a convergent first lens unit stationary during zooming and moved on the optical axis during focusing, a divergent second lens unit which is a variator moved on the optical axis during zooming, a divergent third lens unit which is a compensator moved on the optical axis during zooming, and a convergent fourth lens unit which is a master lens stationary during zooming, and wherein focusing in a normal photographing distance range is effected by moving said first lens unit which is a focusing lens unit in the direction of the optical axis, characterized in that when focusing to an object lying at a shorter distance than said normal photographing distance, all of said first lens unit, said second lens unit and said third lens unit are moved toward the object side in the direction of the optical axis, thereby effecting very close range focusing, said system satisfying the following conditions:

$$0.23 < |f_2/f_1| < 0.67 \quad (1)$$

$$0.62 < |f_3/f_1| < 1.19 \quad (2)$$

$$1.5 < x_2'/x_1' < 7.5 \quad (3)$$

$$0.45 < x_3'/x_1' < 2.7 \quad (4)$$

where x_1' is the amount of movement of said first lens unit (G1) from its reference position in the shortest focal length condition when focused to an object lying at a shorter distance than a normal close range, x_2' is the amount of movement of said second lens unit (G2) for focusing, x_3' is the amount of movement of said third lens unit (G3) for focusing, f_1, f_2 and f_3 are the focal lengths of said first lens unit (G1), said second lens unit (G2) and said third lens unit (G3), respectively.

4,448,496

ZOOM LENS ASSEMBLY HAVING A MECHANICAL LENS SYSTEM MOUNTING MECHANISM OPERATIVE TO ENABLE CLOSEUP OPERATION

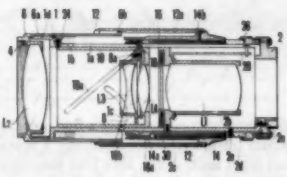
Takashi Isobe, Kanagawa, and Shigeru Kamata, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 192,828, Oct. 1, 1980, abandoned. This application Nov. 10, 1982, Ser. No. 440,716

Claims priority, application Japan, Oct. 11, 1979, 54-131126; Dec. 13, 1979, 54-161871

Int. Cl.³ G02B *7/10*

U.S. Cl. 350—430 **4 Claims**



1. A zoom lens assembly capable of selectively performing a zooming operation and a closeup operation, comprising:

(a) a single operational member for effecting focusing by rotation thereof around the optical axis of said lens assembly, and for effecting zooming operation by axial movement thereof;

(b) first and second lens mounting members containing a first movable lens group and second movable lens group;

(c) a lens barrel member having first and second guide means for controlling movement of said first and second lens mounting members in response to axial movement of said single operational member so as to perform said zooming operation, and third guide means associated with said first guide means to effect said closeup operation;

(d) an intermediary sleeve connected to said single operational member so as to be freely rotatable around the optical axis and arranged to move together with said single operational member in the axial direction;

(e) means for controlling movement of said first and second lens mounting members by movement of said single operational member along the optical axis, said control means unitarily combining said first lens mounting member with said intermediary sleeve so as to move the first lens mounting member along the first and third guide means of the lens barrel and to move the second lens mounting member along the second guide means of the lens barrel;

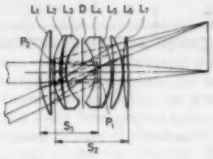
(f) first connecting means between said single operational member and said intermediary sleeve, said first connecting means connecting said single operational member to said intermediary sleeve when said single operational member is rotated toward the closeup range from the focusing range so as to make the first and second lens mounting members movable to the closeup range by rotation of said intermediary sleeve around the optical axis; and

(g) second connecting means between said single operational member and said intermediary sleeve, said second connecting means connecting said intermediary sleeve to said single operational member when said single operational member is moved toward the zooming range from the closeup range so as to restore the intermediary sleeve to the zooming range and to release the connection when the single operational member comes into the zooming range.

4,448,497
GREAT APERTURE RATIO LENS

Koichi Wakamiya, Tokyo, Japan, assignor to Nippon Kogaku K. K., Tokyo, Japan

Filed Mar. 22, 1982, Ser. No. 360,564
Claims priority, application Japan, Mar. 31, 1981, 56-47849
Int. Cl.³ G02B 9/62
U.S. Cl. 350—464 **9 Claims**



1. A great aperture ratio lens having a long back focal length and high aperture efficiency and being good in aberration balance, including a first lens which is a positive meniscus lens having its convex surface facing the object side, a second lens which is a positive meniscus lens having its convex surface facing the object side, a third lens which is a negative meniscus lens having its convex surface facing the object side, a fourth lens which is a negative lens having its concave surface facing the object side, a fifth lens which is a positive lens having its convex surface facing the image side, a sixth lens which is a positive meniscus lens having its convex surface facing the image side, and a seventh lens which is a positive lens, said fourth lens and said fifth lens being cemented to each other, said great aperture ratio lens satisfying the following conditions:

$$0.74f<l<0.88f \quad (1)$$

$$0.94 < \frac{r_1}{f_1} + \frac{r_3}{f_2} < 1.05 \quad (2)$$

$$0.45 < \frac{|r_{11}|}{f_6} < 0.70 \quad (3)$$

$$0.65<r_1/f_1<0.75 \quad (4)$$

$$1.35<r_3/r_6<1.52 \quad (5)$$

$$1.17<f_2/f_1<1.51 \quad (6)$$

where

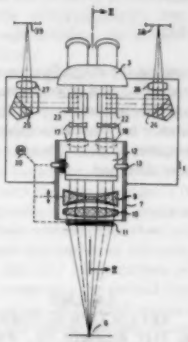
r_i: radius of curvature of the ith surface from the object side
d_i: distance between the ith surface from the object side and the next surface
n_i: refractive index of the ith lens from the object side
ν_i: Abbe number of the ith lens from the object side
f_i: focal length of the ith lens from the object side
l: full length of the lens (distance from the foremost lens surface on the object side to the rearmost lens surface on the image side).

4,448,498
OPERATION MICROSCOPE

Ortwin Muller; Klaus Biber, both of Aalen; Heinz Jakubowski, and Gerhard Hanemann, both of Oberkochen, all of Fed. Rep. of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim/Brenz, Oberkochen, Fed. Rep. of Germany

Filed Jan. 29, 1982, Ser. No. 343,943
Claims priority, application Fed. Rep. of Germany, Feb. 12, 1981, 3105018
Int. Cl.³ G02B 21/02, 21/22, 13/10
U.S. Cl. 350—516 **7 Claims**

1. An operation microscope having an observation-ray path and comprising a microscope housing and means for rigidly mounting the same to fixed supporting structure, at least one observation tube fixed to said housing, an objective housing swingably connected to said microscope housing, an objective carried within said objective housing, means for selectively varying the back focus of said objective, means including a pair of wedges rotatably carried by said objective housing on said

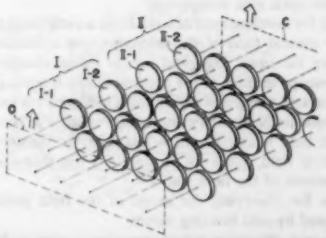


ray path and in front of said objective, and means for selectively angularly positioning said wedges with respect to each other whereby the magnitude and direction of lateral offset of the observation-ray path external to said objective may be selectively controlled, with respect to the optical axis of said objective.

4,448,499
IMAGE TRANSMITTER FOR COPYING APPARATUS OF SLIT EXPOSURE SCANNING TYPE

Hisashi Tokumaru, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed May 21, 1981, Ser. No. 265,795
Claims priority, application Japan, May 25, 1980, 55-72399
Int. Cl.³ G02B 27/00
U.S. Cl. 350—573 **16 Claims**



1. In a copying apparatus of a slit exposure scanning type in which an original and an image recording member are correlatively movable in a scanning direction relative to an image transmitter optically positioned therebetween so that images of successive striped portions of the original extending in a direction transverse to the scanning direction are scanned and projected onto the image recording member successively by the image transmitter to thereby form a complete image of the original, the image transmitter comprising a plurality of rows of erecting lens systems arranged in a transverse direction, each erecting lens systems including on its optical axis a first and second lens element for temporarily forming an inverted real image of the original and a third and fourth lens elements for relaying the inverted real image to finally form an erecting real image of the original on the image recording member, all of the first to fourth lens elements are biconvex symmetric lens

elements, wherein the images formed by the respective erecting lens systems partially overlap each other on the image recording member and the image transmitter fulfills the following conditions:

$$0.45 < |\beta_M| < 0.7$$

$$0.05 < l/D < 0.35$$

wherein: β_M represents the magnification of the inverted real image formed by the first and second lens elements, D represents the maximum effective aperture of the lens system, and l represents the distance between respective edges of the maximum effective apertures of two adjacent erecting lens systems along the transverse direction.

4,448,500

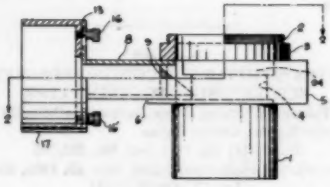
TELESCOPE GUIDER

John B. Marling, 2111 Research Dr., #5, Livermore, Calif. 94550, and Thomas K. Heath, Canyon Country, Calif., assignors to John Beaton Marling, Livermore, Calif.

Filed Oct. 1, 1981, Ser. No. 307,585

Int. Cl.³ G02B *23/04, 23/16, 27/10*

U.S. Cl. 350—574 **8 Claims**



1. Guiding apparatus for a telescope having an optical field of substantially circular cross section and a camera focused along the optic axis, comprising:

means for bending rays of light from a peripheral portion of the optical field of the telescope into a direction away from the optic axis, said means being attached to said telescope in front of the camera and intercepting the light from said portion of the optical field, wherein said portion substantially occupies the region outside a chord across said field whose length is less than the diameter of said optical field, but is not substantially less than one-half the diameter of the field; and

means for observing the image of the field portion intercepted by said bending means;

wherein said observing means comprises a support holding an eyepiece through which said image is observed, wherein said support is adjustably attached to said bending means in a manner such that the position of said eyepiece may be varied along a direction perpendicular to the eyepiece axis and lying in the plane of the eyepiece axis and optic axis, and wherein said support comprises:

a plate attached to said bending means, having a plurality of holes;

an eyepiece holder having a plane surface slidably contiguous to said plate, said surface having a plurality of holes aligned with said plate holes, wherein at least one of each pair of aligned holes is elongated in said direction of eyepiece adjustment; and

a plurality of screw fastener members, each member fitting into one pair of said aligned holes, such that said holder may be thereby adjusted and fastened against said plate.

4,448,501

EYE GLASSES FOR EXPERIMENTATION AND TESTING

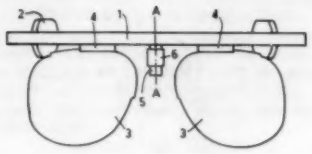
Jean Cogez, Paris, France, assignor to Essilor International (Compagnie Generale d'Optique), Creteil, France

Filed Apr. 13, 1982, Ser. No. 367,958

Claims priority, application France, Apr. 13, 1981, 81 07359

Int. Cl.³ G02C *5/04, 5/12;* A61B *3/04*

U.S. Cl. 351—128 **6 Claims**



1. Eye glasses for experimentation and testing of the type comprising a frame on which adjustable lens holders are shifted to allow eye testing of a patient to be provided with eye glasses having different corrective lenses, and with different positions of said lenses relative to the eyes of the patient, with said frame comprising a frontal mounting provided with two eye glass sidepieces and on which slide, in a longitudinally adjustable manner, two lens carriers, and the mounting is extended downwardly in its central portion in the direction of the patient's nose by a bar of short length and on which slides a vertically adjustable support, adapted to engage the patient's nose or the eye glasses he must wear during the test, characterized in that said bar (5) has a portion with two non-parallel faces (10) which form a wedging bevel and on which two conjugate faces (11) of the adjustable support (6) engage under the action of an elastic means (8) to maintain the adjustable support (6) in position by wedging.

4,448,502

SPREADABLE BAR FOR EYEGLASS FRAMES PROVIDED WITH A SPRING HINGE

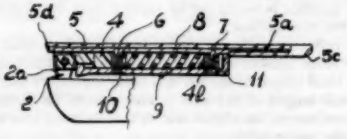
Giuseppe Tota, Agordo (Belluno), Italy

Filed Jun. 29, 1981, Ser. No. 278,169

Claims priority, application Italy, Oct. 16, 1980, 3810 B/80[U]

Int. Cl.³ G02C *5/16*

U.S. Cl. 351—153 **3 Claims**



1. An eyeglass frame having a base at each side thereof and a spring hinge assembly for each base, each spring hinge assembly including:

(A) a base,

(B) a bar,

(C) a spring hinge joining said bar to said base, said spring hinge comprising:

(i) a cavity at the proximal end of said bar, said cavity having an open end facing said base,

(ii) a projection extending away from the base of said cavity,

(iii) a guiding and hinge portion, said guiding and hinge portion constituting:

(a) a cavity-defining means slidable in the cavity at the

proximal end of the bar and including a closed wall at its distal end,

(b) a slender hinge end protruding from the cavity-defining means at the proximal end thereof,

(c) means pivotally connecting the hinge end to the base,

(iv) a spring within the cavity-defining means, said spring having one end abutting the projection and the other end abutting the closed wall of the cavity-defining means, said spring being of helical configuration and under compression, and

(D) a cover having a skirt located within the cavity in the bar and a base overlying the cavity-defining means and including means securing the cover to the bar,

(E) whereby the spring hinge permits the bar to be spread horizontally beyond normal open use position and to be angled vertically away from normal open use position, the latter by horizontal flexure of the slender hinge end,

(F) the front corner of the bar abutting the base to limit outward angling movement of the bar in a horizontal plane beyond normal use postion,

(G) the hinge and guiding portion being of synthetic resilient plastic.

4,448,503

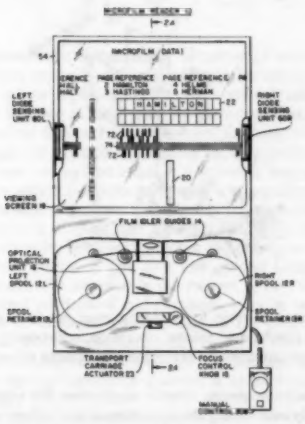
AUTOMATIC HIGH SPEED MICROFILM SEARCHING SYSTEM

Norman N. Axelrod, New York, N.Y.; Peter Haas, Ridgewood, N.J., and Rainer Noess, Goshen, Mass., assignors to Information Retrieval Systems Corp., New York, N.Y.

Filed Apr. 21, 1981, Ser. No. 256,140

Int. Cl.³ G03B *23/12*

U.S. Cl. 353—26 A **11 Claims**



1. An automatic high speed microfilm searching system for locating a desired frame of microfilm employing a microfilm reader which rapidly transports the microfilm by means of a film drive and control unit from one spool to another past an optical projection unit which projects the optically-recorded images from the microfilm onto a viewing screen, each frame consisting of information data and index data, the index data comprising a sequence of vertically-aligned data bar groups, each vertical data group repesenting all or part of a character of a sequence of characters of a unique index code for the associated frame, with a synchronization bar vertically positioned near said vertical data groups, said system comprising:

(a) a bar sensing unit comprising a plurality of vertically-aligned data bar sensors and a plurality of synchronization bar sensors vertically-aligned with said data bar sensors, with at least two data bar sensors adapted to sense each of the data bars of a vertical group and at least two synchronization bar sensors adapted to sense the synchronization bar;

(b) said bar sensing unit being fixedly positioned within the field of focus of the optically-projected images of the data bars and synchronization bar;

(c) one or more of the plurality of synchronization bar sensors sensing the synchronization bar, depending on whether the synchronization bar is high, low or centrally positioned vertically;

(d) position determining means responsive to each of the plurality of synchronization bar sensors to determine whether the sensed synchronization bar is high, low or centrally positioned vertically;

(e) data bar signal selecting means responsive to each of the plurality of data bar sensors and to said position determining means to select the data bar signals from the data bar sensors corresponding in vertical position to the synchronization bar sensor which sensed the synchronization bar;

(f) computer means responsive to selected data bar signals representing a plurality of characters of the index code and to signals repesenting the desired frame index code to cause said film drive and control unit to stop said desired frame adjacent the optical projection unit to project the information on said desired frame onto said viewing screen; and

(g) a plurality of pairs of synchronization bars, each half the width of a data bar, with each pair positioned vertically adjacent a vertical data group, and further including storage means responsive to the transition between each pair of synchronization bars to store the data represented by the associated vertical data group.

4,448,504

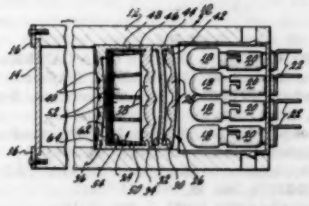
REAR END PROJECTION SYSTEM EMPLOYING ASPHERICAL LENSES

Richard M. Altman, Woodland Hills, Calif., assignor to Industrial Electronic Engineers, Inc., Van Nuys, Calif.

Filed Nov. 18, 1981, Ser. No. 322,516

Int. Cl.³ G03B *21/26*

U.S. Cl. 353—36 **16 Claims**



1. A character projection unit for projecting on a screen images of characters on a film, including,

a plurality of light sources mounted in side-by-side relation, the light sources constituting filament lamps at least some of which have misaligned filaments,

a plurality of condensor lenses mounted in side-by-side relation and having oppositely disposed first and second surfaces,

a first plurality of projection lenses mounted in side-by-side relation between the condensor lenses and the screen and having oppositely disposed first and second surfaces and having aperture stops of particular dimensions,

means for supporting the film at a position between the condensor lenses and the projection lenses in the first plurality,

at least one condensor lens plate in which is disposed the plurality of individual condensing lenses, and

at least one projection lens plate in which is disposed the plurality of individual projection lenses,

a plurality of complete projection systems each including an individual one of the condensor lenses formed in the condensor lens plate and a corresponding one of the individual projection lenses formed in the projection lens plate, and

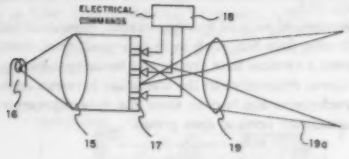
at least one of the lens surfaces of each of the condensor lenses and projection lenses being formed as an aspheric surface for providing for the focusing of the light from the misaligned filaments of the filament lamps on the film and for assuring the passage of substantially the entire images from the film through the apeture stops of the particular dimensions on the projector lens and for the focusing of the images from the film on the screen.

4,448,505

ARRANGEMENT FOR ADDRESSING RAYS OR PLANES OF LIGHT IN SPACE

Paul DiMatteo, Huntington, N.Y., assignor to Robotic Vision Systems, Inc., Hauppauge, N.Y.

Filed Sep. 24, 1982, Ser. No. 423,197
Int. Cl.³ G03B *21/02*; G01B *11/24*
U.S. Cl. 353—122 **7 Claims**



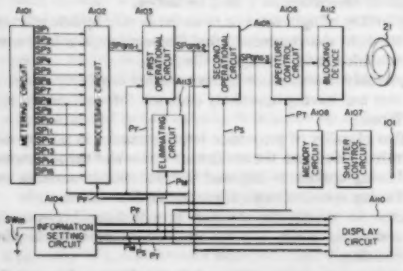
1. An arrangement for projecting a sequence of coded patterns onto an object surface, comprising: code generation means having a plurality of electrically addressable light attenuation regions with a single light source for irradiating said code generation means; each region of low attenuation resulting from addressing producing illumination of a corresponding part of said projected coded pattern; said coded pattern being projected onto the object surface by passing electromagnetic radiation through said code generation means.

4,448,506

EXPOSURE CONTROL DEVICE OF A CAMERA

Takashi Saegusa, Sagamihara; Osamu Maida, Tokyo, and Toru Fukuhara, Isehara, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Continuation of Ser. No. 141,886, Apr. 21, 1980, abandoned. This application Jul. 7, 1982, Ser. No. 396,060
Claims priority, application Japan, Apr. 27, 1979, 54-51527; May 1, 1979, 54-52470; Jun. 15, 1979, 54-75419
Int. Cl.³ G03B *7/087, 7/097, 17/18*
U.S. Cl. 354—431 **21 Claims**



1. An exposure control device of a camera having aperture control means for varying an aperture of a phototaking lens, said device comprising:

first metering means for effecting metering while dividing an object into a plurality of metering areas and for generating a first metering output determining an exposure of the object on the basis of a plurality of photoelectric outputs corresponding to said areas;

second metering means for metering said object through said aperture to generate a second metering output;

first operational means for generating a first operation output including information on the difference between said first metering output and said second metering output;

second operational means for adding said second metering output during operation of said aperture control means and said first operation output and generating a second operation output; and

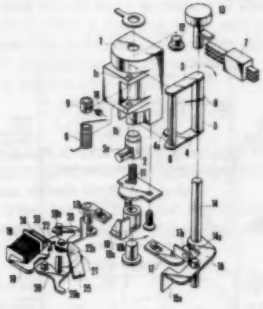
blocking means for blocking said operation of said aperture control means when said second operation output and an output corresponding to a preset shutter speed assume a predetermined relation.

4,448,507

CAMERA

Akio Sunouchi, Tokyo; Ryuji Suzuki, Kanagawa; Toshikazu Ichiyanagi, and Masahisa Fujino, both of Tokyo, all of Japan, assignors to Minigrip, Inc., Orangeburg, N.Y.

Filed Jun. 14, 1982, Ser. No. 388,253
Claims priority, application Japan, Jun. 22, 1981, 56-96412
Int. Cl.³ G03B *1/12, 17/38*
U.S. Cl. 354—173 **7 Claims**



1. A camera capable to changing over between electrical release and mechanical release operation, comprising:

(a) a release member for actuation of a camera release operation;

(b) an electromagnetic release mechanism for electromagnetically controlling the operation of said release member;

(c) a mechanical release mechanism for mechanically controlling the operation of said release member;

(d) changeover means for changing over the functional connection of said release member from with one of said electromagnetic release mechanism and said mechanical release mechanism to the other;

(e) control means alternately switched between a first position where said electromagnetic release mechanism is rendered operative and a second position where the winding operation is rendered possible,

said control means assuming said first position when the winding operation is terminated, and said second position when the exposure operation is terminated;

(f) operating means for actuating said electromagnetic release mechanism or said mechanical release mechanism depending upon the switched position of said changeover means,

said operating means being movable between a first position where a releasing operation is carried out and a second position where the releasing operation is not carried out; and

(g) means responsive to establishment of a functional connection between said release member and said mechanical release mechanism by said changeover means for hindering said control means from being switched to said second position when said operating means is in said first position, and for permitting said control means to be switched to said second position when the operating means is in said second position.

4,448,508

CUT FILM CASSETTE WITH TWO FILM CHAMBERS

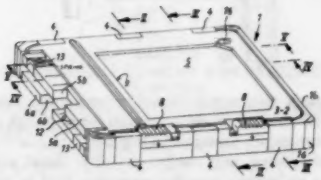
Walter Bauer; Heinrich Färber, and Jürgen Müller, all of Munich, Fed. Rep. of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 19, 1982, Ser. No. 379,971

Claims priority, application Fed. Rep. of Germany, May 20, 1981, 3119977

Int. Cl.³ G03B *17/26*

U.S. Cl. 354—281 **28 Claims**



1. A cassette for simultaneous reception of two cut films, comprising a centrally disposed partition having at least substantially mirror symmetrical first and second sides spaced-apart and first and second marginal portions; at least substantially identical first and second covers; first and second coupling means for movably connecting the respective covers to said partition so that each cover is movable between a first position in which it is remote from and a second position in which it is adjacent to and defines with the respective side of said partition a discrete film chamber; and first and second locking means for releasably holding the respective covers in their second positions, said first and second locking means being respectively disposed in the regions of said second and first marginal portions of said partition, wherein each of said covers has an exposure aperture, and further comprising first and second shutters installed in the respective covers, each of said shutters being movable between first and second positions in which the corresponding aperture is respectively exposed and closed.

4,448,509

INTERCHANGEABLE LENS BARREL WITH SIGNAL TRANSFER CONTACTS

Makoto Katsuma, Kanagawa; Shigeru Kamata, Tokyo; Syuichiro Saito, Kanagawa; Masaharu Kawamura, Kanagawa, and Akira Akashi, Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 9, 1982, Ser. No. 416,136

Claims priority, application Japan, Oct. 26, 1981, 56-171237[U]; Oct. 26, 1981, 56-171238; Oct. 26, 1981, 56-159528[U]

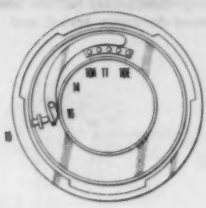
Int. Cl.³ G03B *17/00, 17/14*

U.S. Cl. 354—286 **5 Claims**

1. An interchangeable lens barrel, comprising:

(a) signal transfer means for transferring signals between a part of the interchangeable lens barrel and an imaging apparatus, and coupling means arranged to permit said part of the interchangeable lens barrel to be attached to and detached from the imaging apparatus; and

(b) a protection member for protecting said signal transfer means, said protection member being arranged to cover



the signal transfer means when said part of the interchangeable lens barrel is detached from the imaging apparatus, and to be retracted away from the signal transfer means when said part of the interchangeable lens barrel is mounted on the imaging apparatus.

4,448,510

CAMERA SHAKE DETECTION APPARATUS

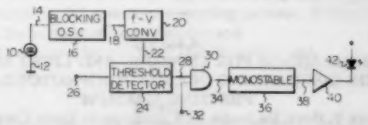
Makoto Murakoshi, Asaka, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 14, 1982, Ser. No. 434,341

Claims priority, application Japan, Oct. 23, 1981, 56-169589

Int. Cl.³ G03B *17/18*

U.S. Cl. 354—289.12 **20 Claims**



1. Apparatus for detecting a camera shaking comprising:

acceleration sensing means mounted in the camera for sensing acceleration due to shaking of the camera to produce an electrical signal associated with the acceleration sensed;

alarm indicator means for indicating an alarm; and

control circuit means connected to said acceleration sensing means for comparing the electrical signal with a threshold signal level, said control circuit means being operative in response to releasing of a shutter of the camera to enable said alarm indicator means when the electrical signal exceeds the threshold, whereby said alarm indicator means indicates an alarm representative of the possibility of blur occurring due to shaking of the camera in an image taken by the camera.

4,448,511

ELECTROPHOTOGRAPHIC RECORDING APPARATUS WITH CORONA-DISCHARGE DEVICE HAVING COVER MEANS BETWEEN END OF DISCHARGE WIRE AND ELECTROPHOTOSENSITIVE SURFACE

Keiji Masuda, Hachioji, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Dec. 8, 1981, Ser. No. 328,748

Claims priority, application Japan, Dec. 18, 1980, 55-182775

Int. Cl.³ G03G *15/02*

U.S. Cl. 355—3 CH **11 Claims**

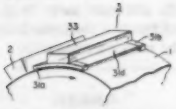
1. An electrophotographic recording apparatus, comprising:

an electrophotosensitive means having an electrophotosensitive surface;

a corona discharge device located adjacent said electropho-

tosensitive surface, said corona discharge device including at least one elongated discharge wire spaced from said electrophotosensitive surface and extending along a dimension of said electrophotosensitive surface, said discharge wire having opposite ends;

said electrophotosensitive surface being movable relative to said corona discharge device; and



said corona discharge device including covering means at least at each end of said discharge wire for substantially covering the space between said discharge wire and said electrophotosensitive surface at each end of said discharge wire, said covering means extending from said discharge wire and extending toward said electrophotosensitive surface, said covering means having contact portions contacting with said electrophotosensitive surface.

4,448,512

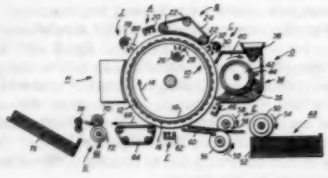
LIGHT MEANS FOR EXPOSING AND LIGHT MEANS FOR DISCHARGING IN A ELECTROPHOTOGRAPHIC PRINTING MACHINE

Lloyd F. Bean, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 19, 1982, Ser. No. 379,610

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—3 R **11 Claims**



1. An electrophotographic printing machine, including:

a photoconductive member;

means for charging said photoconductive member;

means, in communication with said photoconductive member, for forming a non-uniform charge pattern on said photoconductive member and optically filtering light rays transmitted thereto;

means for exposing the non-uniform charge pattern with a light image to record a latent image on said photoconductive member with the light image being substantially attenuated by said forming and filtering means; and

means for transmitting light rays onto selected portions of said photoconductive member to discharge selected regions of the charge pattern with the light rays being of a bandwith selected to be substantially unattenuated by said forming and filtering means.

4,448,513

IMAGE INFORMATION RECORDING APPARATUS

Kazuhiro Hirayama, Yokohama; Yasushi Sato, Kawasaki; Noritaka Mochizuki, Yokohama, and Katsumi Masaki, Kodaira, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

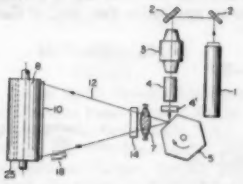
Continuation of Ser. No. 935,987, Aug. 22, 1978, Pat. No. 4,257,701, which is a division of Ser. No. 850,348, Nov. 10, 1977, Pat. No. 4,122,462, which is a continuation of Ser. No. 611,783, Sep. 9, 1975, abandoned. This application Nov. 19, 1980, Ser. No. 208,313

Claims priority, application Japan, Sep. 11, 1974, 49-104738; Sep. 13, 1974, 49-105631; Oct. 1, 1974, 49-112925; Jan. 24, 1975, 50-10286

The portion of the term of this patent subsequent to Oct. 24, 1995, has been disclaimed.

Int. Cl.³ G03G *15/28*

U.S. Cl. 355—8 **10 Claims**



1. An image information recording apparatus, comprising:

means for reading an image carried on an image carrying member and for generating a first electric signal representing the image, said reading and first signal generating means including means for projecting light to the image carrying member in an elongate projection area extending across the image carrying member, means for moving the light projected by said projecting means in a direction substantially perpendicular to the length of the elongate projection area, and photoelectric transducer means for receiving the projected light from the image carrying member to generate a first electric signal representative of the image;

means for combining the first electric signal with a second electric signal representing information to be recorded, which is different from the image of said image carrying member, to form a third electric signal;

means for generating a laser beam modulated in accordance with the third electric signal; and

means for scanning a recording medium with the laser beam.

4,448,514

SPLIT EXPOSURE OPTICAL SYSTEM FOR COPYING MACHINE

Yozo Fujii; Hirofumi Sakaguchi, and Tsugio Hirabayashi, all of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Mar. 31, 1982, Ser. No. 363,917

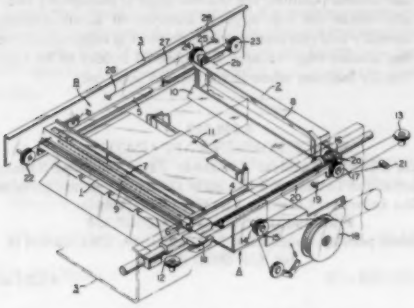
Claims priority, application Japan, Apr. 25, 1981, 56-63156

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—8 **2 Claims**

1. In a slit exposure optical system for a copying machine of the type having a frame supporting a primary movable table provided with a scanning slit and a first mirror for reflecting an incident image from said slit upon a second mirror on a secondary movable table, with means including a driving wire interconnecting the same respective ends of said tables for moving the secondary table at half the speed of the previous table, the improvement comprising means interconnecting the respective opposite ends of said tables for insuring that said opposite ends move relatively to one another in the same manner as the

driven ends, said last means including a sheave mounted on the opposite end of said secondary table and a supplementary wire



attached at its opposite ends to said supporting frame and intermediate its ends extending about said sheave.

4,448,515

CONTROL ARRANGEMENT FOR CONTINUOUS COPYING

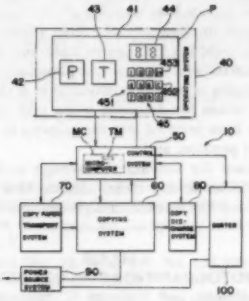
Takuma Ishikawa, Toyokawa, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jun. 21, 1982, Ser. No. 390,563

Claims priority, application Japan, Jun. 27, 1981, 56-99894

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—14 R **9 Claims**



1. In a copying apparatus having a multi-copying mode for effecting a continuous copying function in correspondence with numerical values preliminarily set therein, a control arrangement for controlling functioning of said copying apparatus which comprises;

a first switching means for starting ordinary copying functioning,

a second switching means for causing the copying apparatus to function in a trial copy mode,

a timer means for starting a subsequent copying function after a lapse of a predetermined period of time subsequent to termination of an initial copying functioning when the copying functioning is executed in the trial copy mode, and

a control means for starting the ordinary copying functioning selectively by a time-up signal of said timer means or by start signal from said first switching means during timer functioning of said timer means.

4,448,516

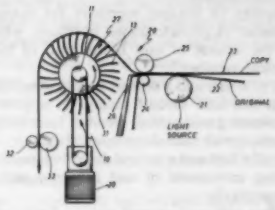
DEVELOPER ROLL

Jonathon S. Arney, and Richard F. Wright, both of Chillicothe, Ohio, assignors to The Mead Corporation, Dayton, Ohio

Filed Jul. 13, 1982, Ser. No. 397,681

Int. Cl.³ G03B *27/32, 27/52*

U.S. Cl. 355—27 **15 Claims**



1. Image-developing apparatus for use in combination with a color-producing substrate; said substrate including a coating composition which contains a chromogenic material and a developer material, said chromogenic material being isolated from said developer material in said chromogenic material and said developer material being co-reactive with said chromogenic material to form a color; said image developing apparatus comprising:

(a) means for image-wise exposing said color producing substrate;

(b) means for advancing said exposed substrate to the developing section of said image-developing apparatus;

(c) a developer roll for releasing said isolated chromogenic material, in the absence of rupturing pressure, by burnishing the surface of said substrate; and

(d) drive means for actuating said developer roll.

4,448,517

DRIVE CONTROLLING MECHANISM OF OPTICAL MEMBER FOR USE IN COPYING APPARATUS

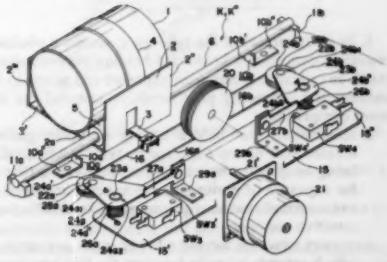
Masamichi Hayashi, Aichi, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jul. 8, 1982, Ser. No. 396,474

Claims priority, application Japan, Jul. 11, 1981, 56-108436; Jan. 20, 1982, 57-7869

Int. Cl.³ G03B *27/34;* G02B *7/11*

U.S. Cl. 355—56 **11 Claims**



1. A drive controlling mechanism of optical members for use in a copying apparatus, comprising:

an optical member which is supported to be movable reciprocatingly along a linear path;

a pair of a first and a second pulleys which are swingably provided at opposite ends in the direction of reciprocating movement of said optical member and on a plane in paral-

lel with said linear path of movement of said optical member;

a drive pulley for driving said first and said second pulleys for rotation thereof, which is provided between said first and said second pulleys and is arranged to be rotatable in a normal direction and the reverse direction;

a wire which is wound around said pair of said first and said second pulleys and said drive pulley and is secured to said optical member;

a plurality of stopper members for stopping said optical member at predetermined positions, which are provided in the course of said linear path of movement of said optical member;

a pair of a first and a second urging members for urging said first and said second pulleys in opposite directions for preventing said optical member from being brought out of contact with said stopper member;

a pair of a first and a second detecting members for detecting swing movement of said first and said second pulleys, respectively;

said first and said second pulleys being selectively swung through contact of said optical member by one of said stopper members; and

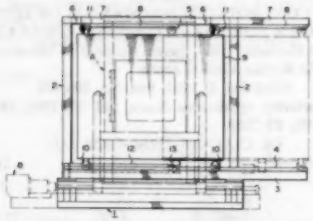
a control means including an electrical circuitry, which is arranged to stop rotational drive of said drive pulley through selective detection of swing movement of respective said first and said second pulleys by said first and said second detecting members.

4,448,518

PHOTOSENSITIVE MATERIAL HOLDER FOR AN UPRIGHT PRINTING MACHINE

Fumihiko Nishida, Kyoto; Isamu Yamanaka, Mukou, and Hiroshi Ijiri, Nagaokakyo, all of Japan, assignors to Dainippon Screen Seizo Kabushiki Kaisha, Kyoto, Japan

Filed Jan. 28, 1982, Ser. No. 343,458
Claims priority, application Japan, Mar. 25, 1981, 56-43781
Int. Cl.³ G03B *27/58*
U.S. Cl. 355—72 **4 Claims**



1. In an apparatus of the type for exposing a photosensitive material comprising a holder for holding photosensitive material in an operative position for exposure and means to facilitate loading and unloading photosensitive material the improvement comprising;

a substantially flat holder having transport guide means located near its top edge and its bottom edge, said holder being adapted to be transported between a first position for exposure of photosensitive material mounted thereon and a second position for loading and unloading of photosensitive material,

a support structure having a lower guide supporting means which extends laterally between the first position and the second position and an upper guide supporting means spaced from the lower guide supporting means which extends from the first position at an angle to the lower guide supporting means rearwardly of the lower guide supporting means to the second position,

the holder being moveably mounted between the first and second positions by the bottom edge guide means being transportable along the lower guide supporting means and the top edge guide means being transportable along the upper guide supporting means,

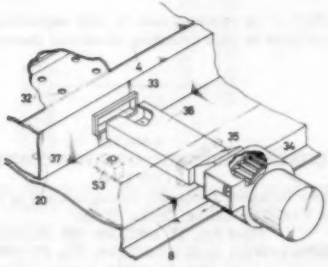
whereby upon moving the holder from the first position to the second position, the bottom edge is transposed laterally while the top edge is transported simultaneously laterally and rearwardly to rotate the top edge relative to the bottom edge causing the material holder to be rearwardly inclined when in the second position.

4,448,519

IMAGE FORMING APPARATUS

Ishida, Hiroshi; Takaichi Kitagawa; Yasuji Sumida; Satoshi Nanba, and Toshikazu Tomi, all of Osaka, Japan, assignors to Mita Industrial Company Limited, Osaka, Japan

Filed Jun. 15, 1982, Ser. No. 388,734
Claims priority, application Japan, Jun. 19, 1981, 56-95436
Int. Cl.³ G03B *27/60*
U.S. Cl. 355—73 **4 Claims**



1. An image forming apparatus comprising:

an exposure section base movable in a horizontal direction to be inserted into and removed from a housing,

said exposure section base having a plurality of suction holes in a region on which a plate-like photosensitive member of a rectangular or square configuration is placed,

switching means for detecting when said exposure section base has been inserted into the housing to reach a predetermined position, and

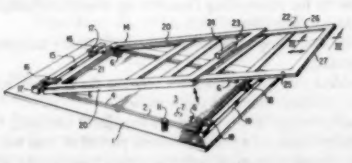
suction means for sucking air through said suction holes when said switching means detects that said exposure section base has reached said predetermined position.

4,448,520

PHOTOGRAPHIC PRINTING DEVICE

Myron B. Achtman, and Malcolm S. Achtman, both of 116 Barmondsey Way NW., Calgary, Alberta, Canada T3K 1V4

Filed Mar. 22, 1982, Ser. No. 360,208
Int. Cl.³ G03B *27/58*
U.S. Cl. 355—74 **10 Claims**



1. A photographic printing device for use in producing photographic proof sheets and photographic enlargements without the use of a pressure plate comprising a planar base plate means; a continuous raised fence means on said base plate means defining a recessed area for receiving a sheet of photographic print paper; frame means; means for releasably

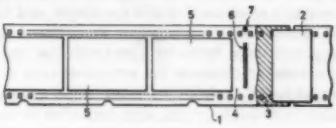
hingedly connecting said frame means to said base plate along one edge of said frame means; carrier means for holding photographic film and including a first peripheral frame member and a plurality of film receiving slots; masking means including a second peripheral frame member and a masking element; said frame means comprising an inwardly opening track portion on three sides thereof and being open on the fourth side thereof for receiving selectively said carrier means or said masking means.

4,448,521

COLOR FILM PRINTING CONTROL METHOD

Kazuo Shiota, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 22, 1982, Ser. No. 360,537
Claims priority, application Japan, Mar. 23, 1981, 56-42010
Int. Cl.³ G03B *27/32*
U.S. Cl. 355—77 **4 Claims**



1. A method of controlling the printing conditions of a color negative, comprising:

measuring the densities of three separate colors, namely, red (R), green (G) and blue (B), of a mask obtained at a transparent portion of said color negative of a color negative film to be used for printing;

comparing said densities thus measured with the average densities of three separate colors, namely, red (R), green (G) and blue (B) of a mask obtained at a transparent portion of the color negative of a normal color negative film of a type equivalent to that of said color negative to be used for printing, to determine the degree of difference therebetween; and

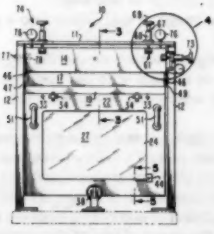
correcting the exposure condition according to said degree of difference thus determined.

4,448,522

DEVICE FOR SUPPORTING AND ALIGNING PHOTOGRAPHIC MASTERS

Russell G. Raush, Conestoga, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 22, 1982, Ser. No. 435,969
Int. Cl.³ G03B *27/02*
U.S. Cl. 355—78 **13 Claims**



1. A device for holding and aligning masters used for photographically producing images on both sides of a medium comprising:

a support structure;

a fixed suspension member supported by said support structure;

a moveable suspension member supported by said support structure in the proximity of said fixed suspension member whereby the plane of said fixed suspension member is substantially parallel to the plane of said moveable suspension member;

means for vertically and horizontally moving said moveable suspension member relative to said fixed suspension member in the plane of said moveable suspension member;

a first support member suspended from said fixed suspension member through a first flexible hinge;

a second support member suspended from said moveable suspension member through a second flexible hinge;

a first frame supported by said first support member, said first frame including an opening for receiving a first photographic plate, and fluid actuated means for holding said plate in said opening;

a second frame supported by said second support member, said second frame including an opening for receiving a second photographic plate, and fluid actuated means for holding said second plate in said opening; and

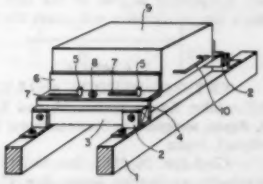
means for pivoting said first and second support members about said first and second hinges whereby said first and second frames are held in a substantially parallel relationship during exposure of said medium, are separable by flexing said hinges during changing of said medium and whereby the images on said plates are alignable by selectively moving said moveable suspension member.

4,448,523

SUBASSEMBLY WITHDRAWING DEVICE IN A COPYING MACHINE

Michio Kanzaki, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Apr. 5, 1982, Ser. No. 365,689
Claims priority, application Japan, Aug. 4, 1981, 56-121435
Int. Cl.³ G03B *29/00*
U.S. Cl. 355—133 **5 Claims**



1. A subassembly withdrawing device for a copying machine, comprising:

a first subassembly supporting member fixedly secured to a subassembly in said copying machine;

a second subassembly supporting member fixedly secured to subassembly-withdrawing rail members;

fixing means operating only to fixedly interconnect said first and second subassembly supporting members so that said first and second subassembly supporting members are movable together, said fixing means being removable; and

separate means for movably guiding said first and second members relative to one another so that said first and second members are movable a predetermined distance relative to each other when said fixing means is removed from said first and second members.

4,448,524

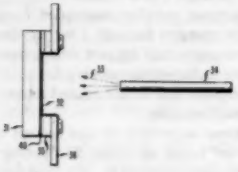
REFLECTIVE CONTAINMENT OF ELECTROMAGNETIC RADIATION IN MATRIX ISOLATION THIN FILMS

Louis E. Brus, Madison, and Ronald Rossetti, North Plainfield, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation of Ser. No. 120,689, Feb. 11, 1980, abandoned. This application Sep. 11, 1981, Ser. No. 301,888

Int. Cl.³ G01N *1/28, 21/01;* **G02B** *5/14*

U.S. Cl. 356—36 **18 Claims**



1. A method comprising

directing a stream of a guest-host gaseous mixture to a cold substrate upon which the mixture freezes to yield a film of the frozen gaseous mixture on the substrate;

directing a beam of electromagnetic energy through the frozen film;

the improvement comprising

the substrate is selected from the group consisting of dielectrics having a refractive index greater than that of the frozen gaseous film, and metals, and in that the electromagnetic energy is propagated through the film along a direction substantially parallel to the substrate and wherein,

prior to directing the stream of the gaseous mixture to the cold substrate upon which it freezes, a slotted structure is placed on at least one end of the substrate,

a passageway, parallel to the substrate surface, being formed, and bounded, by the slot in the said structure and the substrate,

the said gaseous mixture, upon freezing, forming a thin film face, which covers at least part of the passageway exit, which face is perpendicular to the substrate,

such that light, directed through the passageway entrance, which is opposite to that of the thin film face, passes through the passageway and enters the thin film.

4,448,525

CRYSTAL DEFECTS ANALYZER

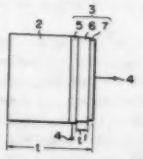
Nobuo Mikoshiba; Kazuo Tsubouchi, and Kenji Wasa, all of Sendai, Japan, assignors to Semiconductor Research Foundation, Miyagi, Japan

Filed Jun. 26, 1981, Ser. No. 277,645

Claims priority, application Japan, Jun. 27, 1980, 55-88099

Int. Cl.³ G01N *21/00, 29/04*

U.S. Cl. 356—73 **24 Claims**



1. A crystal defects analyzer comprising: excitation means for projecting light, electrons or particles on a face of a sample to be analyzed to excite said sample, a thin flexible acousto-electric transducer for converting acoustic waves or elastic strain within the sample into electrical signals, a thin flexible conductive noise-free filter layer bonding said acousto-electric transducer to the entire face of the sample opposite that exposed to said excitation means so that said acousto-electric transducer changes its shape according to deformation of the sample, said filter layer functioning to intercept light, electrons or particles emitted by said excitation means and to transmit acoustic waves or elastic strain produced within the sample by the excitation, means for modulating the amplitude of the light, electrons or particles emitted by said excitation means so as to excite the sample intermittently at a frequency which does not coincide with the resonance frequency of said acousto-electric transducer or an integer multiple thereof and means for holding the sample with said acousto-electric transducer bonded thereto by said filter layer in a manner to minimize acoustic coupling between said holding means and the sample, filter layer and acousto-electric transducer, the thickness of said filter layer being 3000 and 5000 angstroms and the thickness of said acousto-electric transducer being between several microns and several tens of microns, so that the sample, said filter layer and said acousto-electric transducer are allowed to change their integrated shape freely with the result that said acousto-electric transducer conducts the acousto-electric conversion with respect to the modulation frequencies in a broad band.

4,448,526

DEFECT DETECTING METHOD AND DEVICE

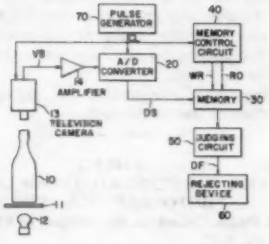
Takashi Miyazawa, Urayasu, Japan, assignor to Kirin Beer Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 11, 1981, Ser. No. 272,792

Claims priority, application Japan, Jun. 27, 1980, 55-87510; Jun. 27, 1980, 55-87511

Int. Cl.³ G01N *21/00*

U.S. Cl. 356—237 **9 Claims**



1. A defect detecting method comprising the steps of:

illuminating an object to be examined;

receiving light from said object to form in image forming means the impage of said object;

dividing the image of said object into a plurality of picture elements;

storing in signal storing means the signals of said picture elements in relation with the positions of portions of said objects to which said picture elements correspond respectively;

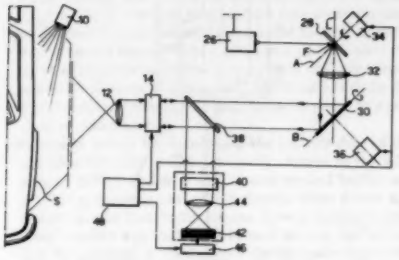
reading the signals of said picture elements in order in which the portions of said object corresponding respectively to said picture elements are traversed by a substantially spiral imaginary line which is drawn on said object; and

detecting a defect in said object from the mutual relationship between the signal of one of the picture elements and the signal of another picture element read out a little before the reading of the signal of said one of the picture elements and the variation of the signal of one of the picture elements relative to the signal of another picture element is found to be outside a predetermined value range.

4,448,527
METHOD AND APPARATUS FOR DETECTING SURFACE DEFECTS IN MECHANICAL WORKPIECES

Emilio Milana, Rivalta, Italy, assignor to Centro Ricerche Fiat S.p.A., Orbassano, Italy

Filed Feb. 8, 1982, Ser. No. 346,672
Int. Cl.³ G01N *21/00*
U.S. Cl. 356—237 11 Claims



1. A method of detecting surface defects in mechanical parts by analysis of diffracted light coming from these surface defects, said method comprising the steps of:

(a) illuminating, with incoherent light, the surface of the part in which it is desired to detect defects,

(b) forming a flat image of this surface in a transparent photo-sensitive medium in which the spatial intensity distribution of the incoherent light reflected from the said surface produces a corresponding and proportional spatial distribution of the values of refractive index of said medium,

(c) illuminating the transparent photo-sensitive medium with plane polarized coherent light by frame scanning in elementary areas,

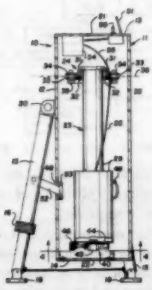
(d) during the scanning operation, detecting variations in at least one of the polarization components of the coherent light after the latter has traversed the said transparent photo-sensitive medium, and

(e) deriving from these variations, information on possible defects in the surface under examination.

4,448,528
PORTABLE LASER VERTICAL COLLIMATOR AND PLUMB LINE INDICATOR

Acie J. McManus, 5828 Parkdale, Dallas, Tex. 75227

Filed Dec. 7, 1981, Ser. No. 327,951
Int. Cl.³ G01C *9/14*
U.S. Cl. 356—250 10 Claims

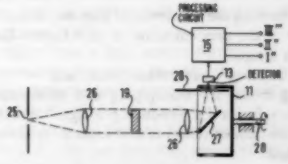


1. Apparatus for transferring a floor marking to a location on an overhead in direct true vertical relationship to said floor marking comprising: a generally tubular housing means having essentially solid vertical walls shielding the interior of said housing from wind disturbance, the end walls of said housing having an area transparent to laser beams, said housing having legs pivotally attached thereto above its mid section providing collapsible tripod support therefor, tubular laser means generating a pair of laser beams directionally separated precisely 180 degrees, gimbal means near the upper end of said housing mounting said laser means near the upper end thereof in pendular fashion free to swing in any direction, said laser means being so positioned in said mounting means that a first of said beams is directed vertically downwardly and the other of said beams is directed vertically upwardly whereby when said floor marking is illuminated by said downwardly directed beam with said pendular mounted laser means at rest, said upwardly directed beam illuminates the point on the overhead in precise vertical relationship to said floor marking, and caging arm means attached to each of said legs and extending into the interior of said housing through openings in said vertical walls, said caging arm means being of such length as to hold said laser means in a generally centralized position within said housing when said tripod support is collapsed with said legs pivoted to rest against said housing.

4,448,529
SPECTRAL ANALYSIS OF A BEAM OF RADIATION

Gerhard Krause, Rosenheim, Fed. Rep. of Germany, assignor to Erwin-Sick GmbH - Optik-Elektronik, Waldkirch, Fed. Rep. of Germany

Filed Apr. 13, 1981, Ser. No. 253,357
Claims priority, application Fed. Rep. of Germany, Apr. 16, 1980, 3014646
Int. Cl.³ G01J *3/28*
U.S. Cl. 356—310 45 Claims



11. Apparatus for the spectral analysis of a beam of radiation to determine one or more spectral components thereof, said apparatus comprising splitting means capable of splitting said beam of radiation into a spectrum of different spectral components so that distinct locations along the spectrum are associated with respective spectral components in said beam; means for modulating said spectrum after said splitting means to impose a common and repetitive location and time dependent modulation function on each of the spectral components, whereby each spectral component is modulated by the same modulation function, but at any given time exhibits a different instantaneous modulation from any other spectral component; common detector means for receiving the modulated spectral components to generate superimposed signals representative of these modulated spectral components, and electronic processing circuitry for electronically segregating said superimposed signals in dependence on the instantaneous modulations applied to the spectral components to form an individual measurement signal for the spectral component of interest.

4,448,530
SPECTROPHOTOMETER

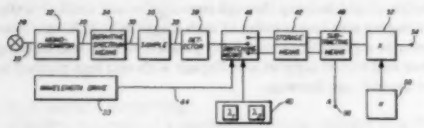
Albert Schmitt, deceased, late of Überlingen, Fed. Rep. of Germany; by Magdalena S. Schmitt, heir, Gasserswies 14, 7770 Überlingen, Fed. Rep. of Germany; by Thomas Schmitt, heir, Gasserswies 14, 7770 Überlingen, Fed. Rep. of Germany; by Martin Schmitt, heir, Gasserswies 14, 7770 Überlingen, Fed. Rep. of Germany; by Georg Schmitt, heir, Gasserswies 14, 7770 Überlingen, Fed. Rep. of Germany; by Annette Schmitt, heir, Gasserswies 14, 7770 Überlingen, Fed. Rep. of Germany, and Ernst Spreitzhofer, Zum Kretzer 4, 7770 Überlingen, Fed. Rep. of Germany

Filed Feb. 23, 1981, Ser. No. 237,308

Claims priority, application Fed. Rep. of Germany, Mar. 5, 1980, 3008345

Int. Cl.³ G01J *3/42*

U.S. Cl. 356—320 2 Claims



1. Spectrophotometer for determining the concentration of a looked-for component from a derivative spectrum; comprising:

a monochromator having a wave length drive for scanning a wave length range;

means for producing a derivative spectrum;

a detector arrangement for producing a signal, which provides said derivative spectrum as a function of the wave length defined by said wave length drive;

means for defining two wave length values;

memory means for storing signals of said detector arrangement;

applying means controlled by said wave length drive for applying said signals provided by said detector arrangement at the two defined wave lengths to said memory means;

means for forming the difference of said two stored signals as measure of the concentration of said looked-for component in a sample;

means for defining a calibration factor; and

multiplying means for multiplying said difference by said calibration factor for producing a signal directly representing the concentration of said looked-for component in said sample.

4,448,531
DISPLACEMENT MEASURING INSTRUMENT

Takahashi Seigo, Kawasaki, Japan, assignor to Mitutoyo Mfg. Co., Ltd., Tokyo, Japan

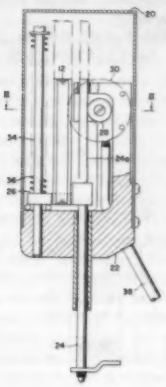
Filed Oct. 6, 1981, Ser. No. 308,996

Claims priority, application Japan, Oct. 16, 1980, 55-147781

Int. Cl.³ G01B *11/02*

U.S. Cl. 356—374 3 Claims

1. A displacement measuring instrument comprising a case having a closed construction, a fixed scale solidly secured to said case, a spindle abutted at the forward end thereof against an object under measurement and reciprocated due to a displacement of the object under measurement, an urging means for giving a measuring force to said spindle and a movable scale operationally associated with said spindle, and capable of measuring the displacement of the objects under measurement from a variation in physical value between the movable scale and the fixed scale due to the displacement of the object under measurement, wherein a rack is formed on the rear portion on said spindle and a vane wheel is provided in said case, which is rotatable by the utilization of the reciprocatory motion of said spindle through a pinion meshed with said rack, so that a resistance to movement increasing with the increase in the rate of travel can be exerted against the movement of said spindle.



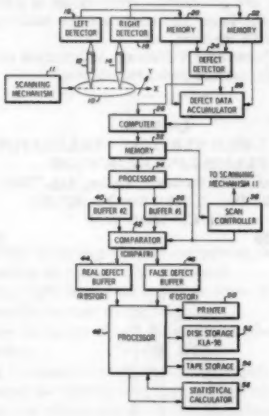
4,448,532
AUTOMATIC PHOTOMASK INSPECTION METHOD AND SYSTEM

David A. Joseph, Mountain View, and Peter G. Eldredge, Santa Clara, both of Calif., assignors to KLA Instruments Corporation, Santa Clara, Calif.

Filed Mar. 31, 1981, Ser. No. 249,474

Int. Cl.³ G01B *11/14*

U.S. Cl. 356—394 10 Claims



1. Optical inspection apparatus for detecting defects in photomasks and the like containing a plurality of supposedly identically configured portions. comprising:

first and second detector means disposed in spaced-apart relationship and operative to simultaneously inspect corresponding sub-portions of two of said supposedly identically configured portions and to develop first and second digital signals corresponding to the detected character of each said sub-portion;

scanning means for causing relative movement between the photomask and said first and second detector means

thereby defining at least one scan line across the photomask being inspected;

memory means for storing said first and second digital signals developed as said photomask is scanned;

defect detector means for comparing said stored first and second digital signals and for developing defect signals when said stored second signal differs from said stored first signal;

first signal processing means including first and second buffer means, said first processing means being operative to generate first and second address data corresponding to said stored first and second signals and to store in said first buffer means those defect signals and address data developed in response to a first scan of said one scan line, and operative to store in said second buffer means those defect signals and address data developed in response to a second scan of said one line;

comparator means for comparing the address data of defect signals contained in said first buffer means to the address data of defect signals stored in said second buffer means, and for generating real defect signals when defect signals stored in said first buffer means have a common address which defect signals stored in said second buffer means, and for generating false defect signals each time a defect signal stored in said first buffer means does not have a common address with a defect signal stored in said second buffer means;

real defect buffer means for receiving and storing said real defect signals;

false defect buffer means for receiving and storing said false defect signals; and

utilization means for processing and storing or otherwise utilizing the data stored in said real defect buffer means and said false defect buffer means.

4,448,533

APPARATUS FOR ENSURING THE QUALITY OF PRINTED PRODUCTS

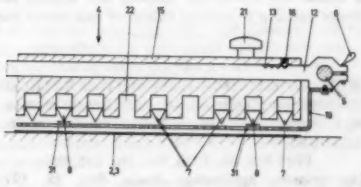
Willi Jeschke, Heidelberg; Hugo Rambausek, Wiesloch; Rudolf-Karl Uhrig, Schriesheim, and Gerhard Löffler, Weisenheim, all of Fed. Rep. of Germany, assignors to Heidelberger Druckmaschinen, Heidelberg, Fed. Rep. of Germany

Continuation of Ser. No. 117,475, Feb. 1, 1980, abandoned, which is a continuation of Ser. No. 915,762, Jun. 15, 1978, abandoned. This application Mar. 15, 1982, Ser. No. 358,380

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1977, 2727227

Int. Cl.³ G01J *3/48*; G01N *21/55*

U.S. Cl. 356—416 **6 Claims**



1. Monitoring device for densitometrically evaluating printed sheets with a printed print-monitoring strip, the printed sheets lying in a static position on a test bench outside the printing machine, comprising holding means displaceable in longitudinal and tranverse direction of the test bench, a plurality of first densitometers for exclusively measuring full-tone density carried by said holding means at a selective spacing from one another so as to define respective gaps between said first densitometers, and a plurality of second densitometers for simultaneously measuring at least one tone density value selected from a range of screen and full tone values, said second densitometers being received, respectively, in said gaps between said first densitometers and being connected to a device for mathematically correlating the values measured by said second densitometers with quality-assessing parameters.

4,448,534

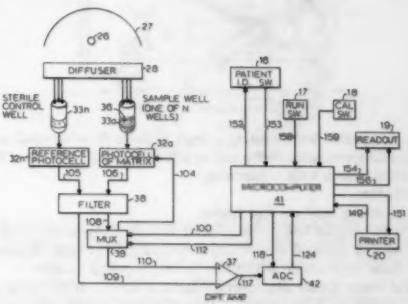
ANTIBIOTIC SUSCEPTIBILITY TESTING

Richard K. Wertz; Albert M. Cook, and James C. Hathaway, all of Sacramento, Calif., assignors to American Hospital Corporation, Evanston, Ill.

Continuation-in-part of Ser. No. 891,648, Mar. 30, 1978, abandoned. This application Oct. 5, 1979, Ser. No. 82,228

Int. Cl.³ G01J *3/46*

U.S. Cl. 356—435 **17 Claims**



1. A method for performing simultaneously a plurality of interrelated optical density tests, employing a sample tray having a multiplicity of wells in rectangular grid arrangement containing liquid samples, said wells having translucent bottoms, comprising:

holding said tray accurately in a single predetermined stationary reading position without blocking off light paths through said wells,

sending light from a light source through all said wells at approximately the same intensity to an array of light-intensity-detecting well-associated photocells, there being one photocell adjacent to each well,

while simultaneously sending light directly from said light source to a reference detecting photocell without passing the light through a said sample,

electronically sequentially transmitting the signals from all said photocells in a prescribed order, each signal corresponding to the intensity of light received by a said photocell,

sequentially comparing the signal from each said well-associated photocell of said array with the simultaneous signal from said reference detecting photocell and developing a related signal therefrom for each well indicating a first adjusted value for each well,

sequentially making an electronic comparison of each said related signal value with an electronically stored data reference value corresponding to a preliminary value for each well derived like said first adjusted value without interposing the sample between said light source and any of said well-associated photocells, and developing a resultant value from that comparison,

sequentially comparing electronically said resultant values with one another for said interrelated optical density tests and with other stored values and determining a conclusion therefrom, and

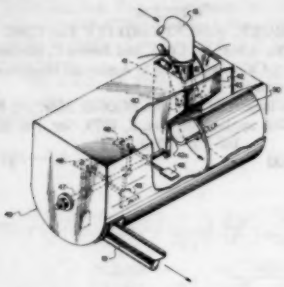
reading out the desired results thereby obained.

4,448,535

APPARATUS FOR BLENDING ADDITIVES INTO A LIQUID

Joe E. West, Coppell, Tex., assignor to The Western Company of North America, Fort Worth, Tex.

Filed Dec. 15, 1981, Ser. No. 330,949
Int. Cl.³ B01F *15/02, 7/04*
U.S. Cl. 366—13 **19 Claims**



1. Apparatus for blending a high volume flow of sand and solid additives, selectively and at selected rates, into water for injection into a well comprising:

a frame;

a blending tank on said frame;

a water intake line on said frame for receiving water from a source off said frame and delivering it to said blending tank, said water intake line having a pump therein;

said water intake line terminating in a downwardly oriented nozzle at said blending tank through which all water delivered to said tank flows; and

means for delivering said sand into said blending tank adjacent said nozzle and disposed for delivering said sand directly into the flow of said water issuing through said nozzle;

means for delivering solid additives into said blending tank, said solid additive delivery means being constructed and arranged to deliver additive into said blending tank adjacent said nozzle and disposed for delivering said solid additive directly into the flow of said water issuing through said nozzle;

whereby the turbulence, violence, low pressure and high shear of all of said water issuing through said nozzle effects dispersion and solution of said sand and solid additives.

4,448,536

CONCRETE MIXER DEVICE

William A. Strong, Rte. 11, Box 1150, Brinkley Rd., Pine Bluff, Ark. 71611

Filed Aug. 9, 1982, Ser. No. 406,173
Int. Cl.³ B28C *5/14*
U.S. Cl. 366—66 **2 Claims**

1. A mixing device for preparing wet mix cementitious products, the device comprising:

a rigid frame adapted to be disposed upon a solid supporting surface;

a pair of generally tubular, horizontally disposed pump casings elevated by said frame and sharing a common open side, the casings forming a mixing chamber, and each casing having front and rear ends and inner surfaces provided with an abrasion resistant liner;

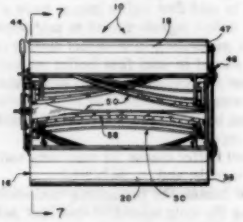
an upper, open top through which raw material to be mixed may be inputted interiorly of said mixing chamber;

two elongated, central impeller shafts, one each extending longitudinally within each of said casings, and rotatably terminating in said front and rear ends of said casings;

an impeller assembly rotatably disposed longitudinally within each of said casings and removably coupled to an impeller shaft, each of said impeller assemblies including a terminal end and each comprising:

a pair of rigid, spaced-apart spiders, a spider being defined at each of said terminal ends, and each spider having three equally radially spaced-apart and integral arm segments extending outwardly from a central spider region provided with an inner notch adapted to be selectively manually removably coupled to said said impeller shaft, the notches of each spider being radially, angularly offset from each other to facilitate positive placement and maintenance of said impeller assemblies in generally coaxial relation relative to said shafts;

a plurality of pairs of spiralled, spaced-apart mixing rods extending generally longitudinally within the casing between opposite spaced-apart arm segments of the spiders, said rods being spaced apart from each other a distance substantially equal to or greater than the size of



the largest constituent aggregate piece in the cementitious mixture to be blended; and,

a spiralled outermost, resilient wiping blade extending between the outermost portions of said spider arm segments in spaced-apart relation with respect to said mixing rod pairs for wipingly contacting the casing liner in response to rotation of the impeller assembly;

hub means for removably securing said spiders to said impeller shafts to prevent relative rotation therebetween;

a material discharge opening defined in said mixing device between said casings at the front ends thereof;

means for rotating said impeller shafts whereby to rotate said impeller assemblies in opposite directions and thus effectuate the mixing of materials within said pump casings simultaneously with the forced conveyance of said materials toward said discharge opening; and,

door means for selectively opening and closing said discharge opening to control output of said mixed material.

4,448,537

SCREW-TYPE HYDRO-EXTRACTING EXTRUDER

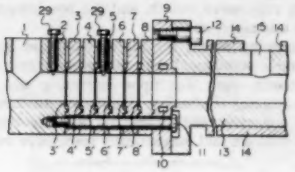
Teruhiko Sugimori; Fumio Suzuki, and Hideaki Habara, all of Ohtake, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed Sep. 10, 1980, Ser. No. 185,930
Claims priority, application Japan, Sep. 18, 1979, 54-128972[U]; Sep. 19, 1979, 54-129821[U]
Int. Cl.³ B29B *1/06*
U.S. Cl. 366—75 **5 Claims**

1. A hydro-extracting extruder for dehydrating a solid material having a predetermined liquid component, said extractor of the type including means defining an extrusion chamber and material supply means in communication with said chamber for supplying a predetermined quantity of said material to said chamber, wherein the improvement comprises:

means defining a hydro-extracting zone downstream of said material supply means, said hydro-extracting zone means comprising a plurality of plate members each of which includes means defining a cavity for axially communicating with said chamber, a front face having a predeter-

mined number of first raised portions and a back face having a predetermined number of second raised portions, said first and second raised portions arranged so that each cooperates with second raised portions and first raised portions, respectively, of immediately adjacent plate members so that between a predetermined plate member and adjacent ones thereto, a space is defined through which a portion of said liquid component will pass, thereby at least partially dehydrating said material; and



means defining a material heating zone downstream of said hydro-extracting zone means for substantially removing residual liquid remaining in said material including heater means for transmitting heat energy to said material thereby substantially changing said liquid to a gaseous state, and vent means for venting said gas; and

connecting means for connecting said hydro-extracting zone means to said heating zone means.

4,448,538

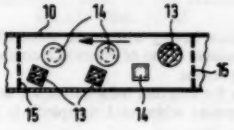
DEVICE FOR REDUCING STATIC AND DYNAMIC PRESSURES IN PIPELINES, PARTICULARLY OF SOLID-BORNE SOUND IN TUBULAR CONDUITS

Juval Mantel, Simeonistrasse 19, D-8000 München 19, Fed. Rep. of Germany

Filed Apr. 6, 1982, Ser. No. 366,100

Int. Cl.³ F01N *1/00*

U.S. Cl. 181—227 **11 Claims**



1. A device for reducing static and dynamic pressures in pipelines, particularly for preventing solid-borne sound from being transmitted through pipelines, said device comprising a tubular outer member configured to be interposed in a pipeline and a compensator contained within said outer member, said compensator comprising an imperforate resilient breathing body whose volume changes with small changes in externally applied pressure.

4,448,539

APPARATUS FOR MIXING SOLID AND LIQUID SUBSTANCES

Herwig Burgert, Bismarckstrasse 40, 6300 Giessen, Fed. Rep. of Germany

Continuation of Ser. No. 160,984, Jun. 19, 1980, abandoned. This application Jul. 7, 1982, Ser. No. 396,041

Claims priority, application Fed. Rep. of Germany, Jun. 22, 1979, 2925191

Int. Cl.³ B01F *3/12, 5/10, 15/02*

U.S. Cl. 366—132 **2 Claims**

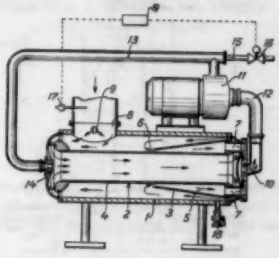
1. A loop reactor for mixing solid and liquid substances, the reactor comprising

a. a tube-shaped reactor housing (1) supported horizontally on a foundation;

b. inlet means (14) at one end and outlet means (10) at the opposite end of said reactor housing;

c. a guide tube (2) in said reactor housing defining a mixing chamber between said guide tube and the inner wall of said reactor housing;

d. a tube portion (3) surrounding said guide tube and being connected to said guide tube at the end adjacent said outlet means, said tube portion and said guide tube defining an annular space (5) between them, said annular space being connected to said mixing chamber by openings (6) through which said substances enter into said annular space;



e. a filling socket (8) having means for filling both said solid and liquid substances connected to the upper side of said reactor housing adjacent said inlet means for filling the substances into the reactor housing;

f. at least one level control indicator (17) in said filling socket for opening and closing said socket and thereby regulating the level of the substances in the reactor;

g. a pipe connection (12) and (13) between the reactor housing inlet means and outlet means;

h. a circulating pump (11) in said pipe connection for pumping the mixture from said outlet means to said inlet means; and

i. a discharge valve (16) connected to said pipe connection for discharging the ready mixture.

4,448,540

APPARATUS FOR MIXING A LIQUID ADDITIVE COMPOUND WITH VAPOR AND LIQUID PHASES OF ANHYDROUS AMMONIA

David M. McLeod, Midland County, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jun. 4, 1982, Ser. No. 385,195

Int. Cl.³ B01F *15/02, 15/04*

U.S. Cl. 366—160 **4 Claims**

1. An apparatus for mixing a stream of anhydrous ammonia, having a vapor and liquid phase, with a stream containing a liquid additive compound, to obtain a homogeneous vapor-liquid mixture of the anhydrous ammonia and the liquid additive compound, the apparatus comprising:

a meter regulator means;

a mixing chamber;

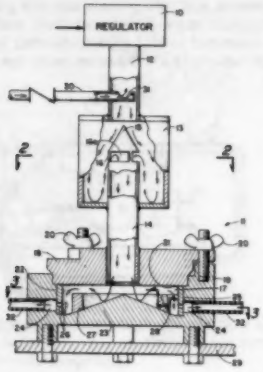
a first conduit section which connects the meter regulator to the mixing chamber;

a second conduit section having upper and lower ends, the upper end in positioned inside the mixing chamber, the upper end is defined by a cone-shaped cap attached to the upper lip of the second conduit section by strut members, the strut members are spaced apart to define fluid inlet passages in said upper end, and the lower end connects into a flow equalizer manifold;

the flow equalizer manifold includes a distribution chamber defined by a top wall, a floor, and a sidewall, the distribution chamber floor has a cone-shaped surface, and the

distribution chamber sidewall has outlet openings therein which communicate with a use point;

the flow equalizer manifold includes an orifice sleeve, the sleeve is positioned inside the distribution chamber, it surrounds the cone-shaped surface, it is in contact with the chamber sidewall, and it has openings therein which communicate with the outlet openings in the chamber sidewall;



the flow equalizer manifold includes a flow integrator ring, the flow integrator ring is positioned inside the orifice sleeve, and it seats on the cone-shaped surface of the distribution chamber floor;

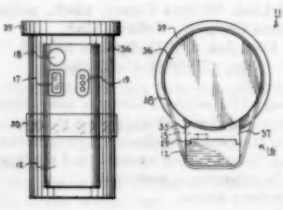
the apparatus includes a delivery tube, the tube has a delivery end positioned in the first conduit section between the meter regulator and the mixing chamber, and the delivery end has an outlet opening in the wall of the tube which faces toward the meter regulator.

4,448,541

MEDICAL TIMER APPARATUS

Jonathan D. Wirtschafter, Minneapolis, Minn., assignor to Mediminder Development Limited Partnership, Minneapolis, Minn.

Filed Sep. 22, 1982, Ser. No. 421,681
Int. Cl.³ G04B *47/00*
U.S. Cl. 368—10 **3 Claims**



1. In medical timer apparatus having means for measuring time, an improvement comprising:

(a) providing said apparatus with a magnetically responsive switch for restarting the measurement of time;

(b) providing said apparatus with an integral medication container that may be selectively opened and closed with respect to said apparatus to make accessible and non-accessible, respectively, medication located within said integral container and further including within said integral container a first magnet, such that opening said integral container will position said magnet to activate said magnetically, responsive switch, and wherein said integral medication container may be non-permanently attached and removed, selectively, to and from said apparatus, and further including:

(c) providing said apparatus with non-integral container attachment means for use with a non-integral medication container, comprising:

(i) a second magnet attached proximal to the non-integral medication container;

(ii) sponge means for disposition between said magnetically responsive switch, and the non-integral medication container; and

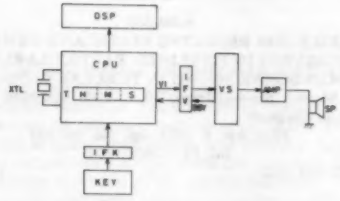
(iii) fastening means for maintaining said apparatus in operable attachment with said non-integral medication container, such that upon squeezing said combined non-integral medication container, attachment means and apparatus, the magnet of said attachment means will activate said magnetically responsive switch.

4,448,542

ELECTRONIC TIMEPIECE

Isamu Washizuka, Kyoto; Yutaka Ikemoto, Nara, and Hiroshi Tsuda, Kyoto, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 12, 1982, Ser. No. 357,754
Claims priority, application Japan, Mar. 23, 1981, 56-42987
Int. Cl.³ G04B *21/08*; G04C *9/00*
U.S. Cl. 368—63 **5 Claims**



1. A timepiece having a time set mode of operation and another time-related mode of operation, comprising:

timekeeping means;

input means for entering information for setting said timekeeping means when said timepiece is in the time set mode;

voice synthesizing means responsive to said input means for synthesizing first sounds representing information input by said input means;

generating means for generating a second sound in the time set mode for indicating that said timepiece is in the time set mode; and

means associated with said timekeeping means for delaying generation of said second sound for a predetermined period following synthesis of said first sounds and for a predetermined period following placing said timepiece in the time set mode.

4,448,543

TIME-OF-DAY CLOCK HAVING A TEMPERATURE COMPENSATED LOW POWER FREQUENCY SOURCE

David K. Vail, Palm Bay, Fla., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jan. 17, 1983, Ser. No. 458,419
Int. Cl.³ G04B *17/20, 1/00*
U.S. Cl. 368—202 **10 Claims**

1. Electronic apparatus including a time-of-day clock, said apparatus comprising:

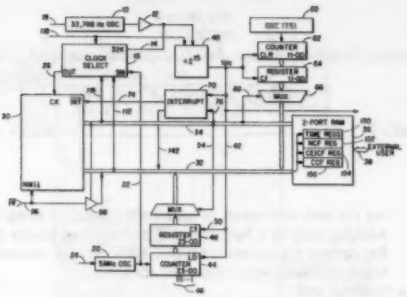
primary means for supplying operating power to said apparatus;

secondary means for supplying power to said time-of-day clock;

means powered by said secondary power supply means for generating a first clock signal;

means coupled to said first clock signal generating means for generating indicia representing a period of time;

means powered by said primary power supply means for generating a second clock signal having a frequency and



accuracy at least one order higher than the first clock signal; and

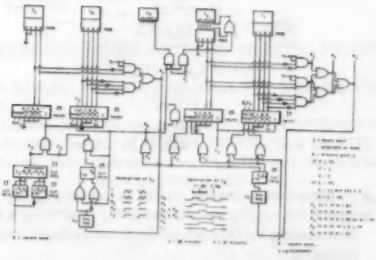
microprocessor means powered by said secondary power supply means and responsive to the indicia for generating data items representing time-of-day, said microprocesor means being clocked by the first clock signal when said primary power supply is disabled and by the second clock signal when said primary power supply is enabled.

4,448,544

METHOD AND APPARATUS TO DIGITALLY DISPLAY THE TIME OF DAY

Richard G. Schreitz, 2020 Brooks Dr., Apt. 203, Forestville, Md. 20747

Filed Dec. 2, 1980, Ser. No. 212,069
Int. Cl.³ G04C *17/02*
U.S. Cl. 368—239 **5 Claims**



1. A digital time display system which comprises:

first digital display means for displaying digits representing hour time values;

second digital display means disposed to the right side of said first display means, said second digital display means being provided for displaying digits representing minute time values;

third digital display means disposed between said first and second display means, said third digital display means being provided for displaying a minus sign when activated; and

timing control means connected to said first second and third display means for selectively causing time displays to occur in one of the following two formats:

(a) in succession from left to right, the current hour and the number of elapsed minutes after that hour; and

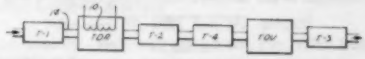
(b) in succession, from left to right, the next hour to subsequently become the current hour and the number of minutes which must yet elapse before that event is to occur.

4,448,545

NON-INTRUSIVE THERMAL POWER MONITOR AND METHOD

David G. Pelka, and Roc V. Fleishman, both of Los Angeles, Calif., assignors to Southern California Gas Company, Los Angeles, Calif.

Filed Mar. 2, 1982, Ser. No. 354,012
Int. Cl.³ G01K *17/16*
U.S. Cl. 374—41 **30 Claims**



1. An improved non-intrusive thermal power monitor for determining thermal power contribution to a fluid stream from an unknown thermal power source or sink, the monitor comprising:

(a) thermal power reference device means adapted to add or remove a known amount of heat to or from a fluid stream flowing through a fluid carrying conduit without intruding into the fluid or conduit;

(b) first non-intrusive temperature differential measuring means for measuring a first temperature differential across the power reference device and generating an electrical signal which is a function of the first temperature differential, the first non-intrusive temperature differential measuring means including a first temperature sensor and a second temperature sensor, each such temperature sensor having means to permit its attachment to the conduit at least ten conduit diameters from the thermal power reference device;

(c) second non-intrusive temperature differential measuring means for measuring a temperature differential across a portion of the fluid stream that contains an unknown thermal power source that adds thermal power to the stream or an unknown thermal power sink that extracts thermal power from the stream, the second temperature differential measuring means generating an electrical signal which is a function of the second temperature differential;

(d) means for determining the heat capacity rate of the fluid from the first temperature differential signal and the known amount of heat; and

(e) means for determining the thermal power introduced into or removed from the fluid by the unknown source or sink from the heat capacity rate and the second temperature differential signal.

4,448,546

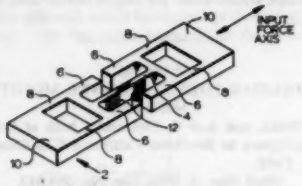
DIGITAL TEMPERATURE SENSOR

Jerome M. Paros, Redmond, Wash., assignor to Novex, Inc., Salt Lake City, Utah

Filed Nov. 28, 1980, Ser. No. 211,126
Int. Cl.³ G01K *11/22, 7/32*
U.S. Cl. 374—117 **23 Claims**

1. A temperature sensor comprising a load-sensitive resonator having at least a pair of spaced-apart mounts which are secured to a base and which isolates said resonator from external forces, said base having a coefficient of thermal expansion which is different from that of said resonator such that said base applies a thermally induced stress to said resonator, said resonator having a resonant frequency and being unstressed at a first temperature in a preselected operating range of said

temperature sensor so that said resonator is compressed at temperatures differing from said first temperature so as to vary the resonant frequency by one polarity and tensioned at tem-



peratures differing from said first temperature so as to vary the resonant frequency in the opposite polarity, thereby changing the resonant frequency of said resonator solely in accordance with changes in the temperature of said resonator and base.

4,448,547

OPTICAL TEMPERATURE MEASUREMENT TECHNIQUE UTILIZING PHOSPHORS

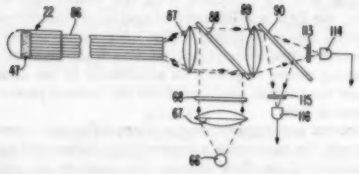
Kenneth A. Wickersheim, Palo Alto, Calif., assignor to Luxtron Corporation, Mountain View, Calif.

Continuation-in-part of Ser. No. 877,977, Feb. 15, 1978, Pat. No. 4,215,275, which is a continuation-in-part of Ser. No. 751,366, Dec. 16, 1976, Pat. No. 4,075,493. This application Jul. 10, 1980, Ser. No. 167,691

Claims priority, application United Kingdom, Dec. 7, 1977, 51006/77

Int. Cl.³ G01N *21/31*

U.S. Cl. 374—131 **67 Claims**



For a temperature measuring system having a visible or near-visible electromagnetic radiation detector optically coupled to receive radiation indicative of temperature, a radiation emitting temperature sensor, comprising:

a substrate adapted to be positioned in heat conductive relationship with an environment whose temperature is to be measured, said substrate being a length of optical fiber, and

a quantity of phosphor material coated on one end of said optical fiber in a manner to be viewed by said optical coupling when said substrate is positioned in a heat conductive relationship with said environment, said phosphor being characterized by emitting, when excited, detectable optical radiation that varies as a known function of the phosphor temperature.

4,448,548

STEAM STERILIZATION INDICATOR

Theodore A. Foley, West Milford, N.J., assignor to PyMaH Corporation, Somerville, N.J.

Filed Jun. 11, 1979, Ser. No. 47,955

Int. Cl.³ G01K *1/02*; A23L *3/00*; C09K *3/00*; C12Q *1/22*

U.S. Cl. 374—160 **13 Claims**

1. A steam sterilization indicator comprising:

a tablet including a fusible material and a binder, said fusible material meltable at a predetermined temperature in the presence of substantially saturated steam, the melting point of said fusible material being substantially lower in the presence of saturated steam than when dry;

a wicking strip having one end in close proximity to said tablet whereupon attainment of said predetermined temperature, said fusible material melts and moves along said strip at a rate proportional to the temperature of said saturated steam;

a steam permeable membrane covering said tablet and said wicking strip, said binder holding said fusible material in tablet form prior to attainment of said predetermined temperature and further providing a mechanism for alter-

ing the rate movement of said fusible material along said wicking strip as a function of the amount of binder used for certain temperature ranges, such rate of movement being similar to spore death kinetics;

a backing; and

an acrylic adhesive, wherein said backing and said membrane enclose said tablet and said strip and said acrylic adhesive holds said membrane and said strip to said backing, said acrylic adhesive acting to further alter the rate of movement of said fusible material along said strip.

4,448,549

TEMPERATURE SENSING DEVICE

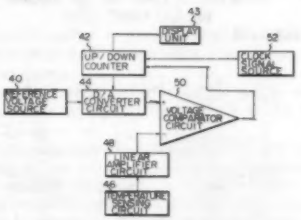
Shingo Hashimoto, and Mitsuo Sekine, both of Tokorozawa, Japan, assignors to Citizen Watch Company Limited, Tokyo, Japan

Filed Feb. 9, 1982, Ser. No. 347,750

Claims priority, application Japan, Mar. 10, 1981, 56-34222

Int. Cl.³ G01K *7/16*

U.S. Cl. 374—170 **5 Claims**



1. A temperature sensing device comprising:

temperature sensing circuit means for producing a temperature sensing voltage whose level varies linearly with temperature;

reference voltage generating means for producing a reference voltage whose level is independent of temperature;

comparator circuit means for comparing said temperature sensing signal and said reference voltage signal and for producing output signals indicative of a difference therebetween; and

circuit means responsive to said output signals from said comparator circuit means for producing signals indicative of a temperature value;

said temperature sensing voltage circuit means comprising first and second MOS field effect transistors and circuit means for controlling the ratio between the drain currents thereof, said drain currents and the physical configurations of said first and second MOS field effect transistors being arranged such that a ratio of the drain current of

said first MOS transistor to the channel pattern ratio of said first MOS transistor is different from a ratio of the drain current of said second MOS transistor to the channel pattern of said second MOS transistor, said temperature sensing circuit means being operative to set the value of said temperature sensing voltage to be directly proportional to the physical quantity kT/q, where k is Boltzmans constant, T is absolute temperature, and q is unit electrical charge.

4,448,550

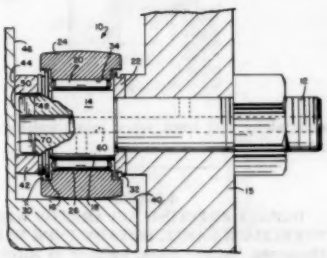
BEARING

John J. Moroney, Torrington, Conn., assignor to The Torrington Company, Torrington, Conn.

Filed Jul. 14, 1982, Ser. No. 398,070

Int. Cl.³ F16C *21/00, 29/04, 33/30*

U.S. Cl. 384—127 **1 Claim**



1. A cam follower-type bearing comprising: an inner race member having a flange at one end and an annular end plate at the other end with a raceway between the flange and the end plate; an outer race member with a raceway spaced from said inner member raceway to provide an annular roller space; rollers in said annular roller space axially kept in position by said flange and said end plate; said inner race member having an annular plain bearing portion extending axially beyond the outer race member and said flange; the plain bearing portion having an end surface adapted to rub against a bearing support surface to provide bearing positioning thrust and location; said inner member having a secondary plain bearing extending partially through the bore of the annular bearing portion.

4,448,551

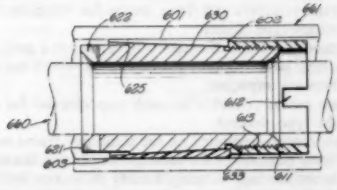
METHOD AND APPARATUS FOR SHAFT SUPPORT FOR TURBINE PUMPS

Reuel A. Murphy, 5200 Cavitt Stallman Rd., Roseville, Calif. 95678

Continuation-in-part of Ser. No. 897,573, Apr. 19, 1978, which is a continuation-in-part of Ser. No. 797,923, May 18, 1977, abandoned. This application Jan. 24, 1979, Ser. No. 5,993

Int. Cl.³ F16C *23/02*

U.S. Cl. 384—252 **1 Claim**



1. An expandable bushing for use within a tubing for purposes of supporting a shaft within said bushing and within said tubing comprising in cooperative relationship: a first elongate tubular member having an interior surface suitable to support a rotatable shaft and an exterior surface including a tapered portion and having threads adjacent one end and having slots suitable to be engaged by a tool; a second elongate tubular member having an opening extending its length, and having an interior tapered surface suitable to slide upon the tapered surface upon the first tubular member, in such manner as to expand outwardly; and means to force said second tubular member to slide upon first tubular member to cause expansion of said second tubular member and to hold the same in an expended figuration; and threaded collar means having slots suitable to be engaged by a tool for the purpose of threading said collar means upon said first tubular member in such manner as to mount upon the threads of said first tubular member and by turning said collar means forcing the said second tubular member to slide upon the said first tubular member.

4,448,552

BEARING LUBRICATION SYSTEM

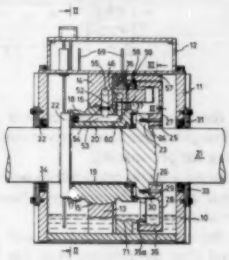
William W. White, Glasgow, and Ian N. MacDonald, Ayrshire, both of Scotland, assignors to James Howden & Company Limited, Glasgow, Scotland

Filed Aug. 18, 1982, Ser. No. 409,307

Claims priority, application European Pat. Off., Aug. 28, 1981, 81303962.5

Int. Cl.³ F16C *33/10*; F16N *7/14*

U.S. Cl. 384—404 **11 Claims**



1. A bearing comprising, in combination;

A. A fixed part having a bearing surface;

B. A shaft rotatable in the bearing surface;

C. A radially extending disc mounted on the shaft for rotation therewith;

D. An axially extending cylindrical ring mounted on said disc at a location spaced radially from the shaft;

E. A lubricant reservoir;

F. Means to feed lubricant from the reservoir to said bearing surface;

G. Means to lead lubricant from said bearing surface to the vicinity of the lower part of said ring;

H. A lubricant scoop mounted within said ring and closely adjacent to the internal cylindrical surface thereof;

I. A closed conduit leading from said scoop to said reservoir, said closed conduit being fully closed to atmosphere from said scoop to said reservoir; and

J. Said scoop being so-shaped whereby, upon rotation of said shaft, a film of lubricant is formed on inner surface of said ring, to move at substantially the same velocity as said ring, this film being picked up at said velocity by said scoop to produce a pressure head in said closed conduit sufficient to pump lubricant to said reservoir.

4,448,553

METHOD OF DETERMINING PRINT STARTING POSITIONS FOR AN IMPACT TYPE DOT PRINTER

Setsuo Yonezawa, and Kazuaki Ikeda, both of Tokyo, Japan, assignors to Seikosha Co., Ltd., Tokyo, Japan

Filed Sep. 15, 1982, Ser. No. 418,534

Claims priority, application Japan, Sep. 16, 1981, 56-145885

Int. Cl.³ B41J *3/12, 3/08*

U.S. Cl. 400—121 **2 Claims**

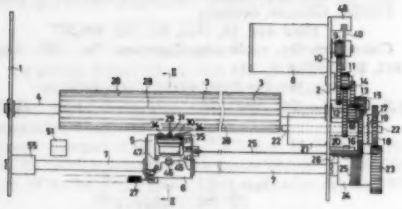
1. A method of determining print starting positions for an impact type dot printer including a rotatable platen having a

plurality of axial projections and a printing head movable from a home position in spacing increments along the platen and having a print hammer actuatable to hit the projections one at a time to print dot-matrix characters on a recording medium between the platen and the print hammer, said method comprising the steps of:

generating a print timing signal in synchronism with rotation of the platen, said print timing signal being indicative of positions in which the print hammer strikes the projections and being composed of a pulse-free blank and a plurality of subsequent pulses defining one cycle;

moving the printing head from the home position for pre-spacing prior to a normal printing operation;

generating a home signal when the printing head leaves the home position;



counting the number of pulses of said print timing signal until a first pulse-free blank arrives while the printing head is moving for pre-spacing;

storing data on a phase relationship between said print timing signal and said home signal based on the counted number of pulses;

counting the number of pulses of said print timing signal generated after the printing head has left the home position until the first pulse-free blank arrives each time the printing head is moved in spacing increments for the normal printing operation; and

setting print starting positions based on said stored data and said last-mentioned number of pulses as counted.

4,448,554

SHEET FEEDING APPARATUS HAVING AN EXPANSIBLE PERIPHERY

Reinhold G. F. Driemeyer, Waterloo, Canada, assignor to NCR Canada Ltd - NCR Canada Ltee, Mississauga, Canada

Filed Dec. 21, 1981, Ser. No. 333,149

Int. Cl.³ B61J *3/02*

U.S. Cl. 400—124 **15 Claims**

1. An apparatus comprising:

a track for guiding a sheet therealong and;

means for feeding a sheet along said track;

said feeding means comprising:

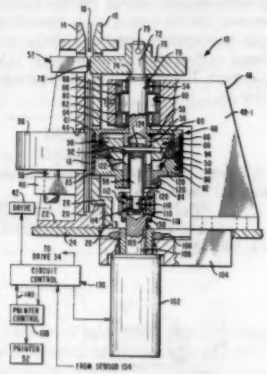
a rotatable member having a shaft mounted for rotation; said rotatable member having a driving periphery extending into said track;

a coupling unit;

means for rotatably mounting said coupling unit at said track;

said coupling unit having an expansible periphery; and

means for selectively moving said expansible periphery between a first position in which said expansible periphery is uncoupled from said driving periphery and a second position in which said expansible periphery is expanded to form a driving coupling with said driving periphery of said rotatable member to feed a sheet positioned therebetween along said track when said rotatable member is rotated.



4,448,555

IMPACT PRINTING APPARATUS WITH INTERCHANGEABLE ROTARY TYPE WHEELS

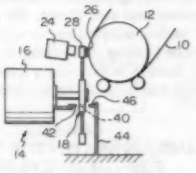
Keiji Hasegawa, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Mar. 16, 1982, Ser. No. 358,556

Claims priority, application Japan, Mar. 20, 1981, 56-40570; Mar. 20, 1981, 56-40571; May 27, 1981, 56-80383

Int. Cl.³ B41J *1/30*

U.S. Cl. 400—144.2 **26 Claims**



1. Impact printing apparatus employing a set of interchangeable rotary type elements and identifying each rotary type element mounted thereon to optimumly match various printing conditions to the identified rotary type element, comprising:

a movable carriage which mounts each rotary type element comprising a rotary hub and a plurality of tongues carrying type members, a hammer for selectively impacting the type members and drive means for rotatably driving the rotary type element;

a stationary frame member which mounts a generally cylindrical paper support platen against which the type members are impacted;

mark means provided on each type element for identifying the type element;

sensor means mounted on the stationary frame member at a home position of the carriage for sensing the mark means as the carriage is being linearly moved to the home position; and

control means for identifying the type element on the carriage in accordance with the sensed mark means;

the drive means being constructed to hold the type element in a predetermined angular position in which the marks are spaced from each other in a direction which is parallel to a direction of movement of the carriage while the

marks are being sensed by the sensor means, the marks being sensed by means of linear movement of the type element past the sensor means;

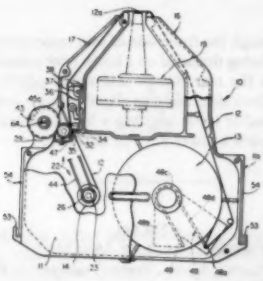
whereby a print control program is selected in conformity to the identified type element while desired printing is carried out in accordance with the selected program.

4,448,556

CARTRIDGE FOR MATRIX PRINTER

Richard Trezise, San Jose; John Boldt, San Ramon, and Keith Gnutzman, Alameda, all of Calif., assignors to Chroma, San Jose, Calif.

Filed Apr. 21, 1982, Ser. No. 370,201
Int. Cl.³ B41J *32/00*
U.S. Cl. 400—208 **7 Claims**



1. A ribbon cartridge for use in a printer comprising:

an envelope having a predetermined thickness for storing ribbon and for supporting a length of ribbon for placement between a platen and print head;

a capstan driven within the envelope for moving the ribbon;

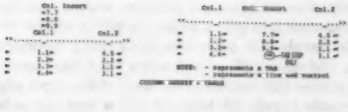
an outboard gear for coupling to ribbon driver means on the printer, the periphery of the gear engaging the capstan to drive it, the gear being mounted for rotation on an ear portion of the envelope thinner than the predetermined thickness of the ribbon containing portion of envelope, said gear including means engageable by said ribbon driver means of said printer.

4,448,557

METHOD AND MEANS FOR INHIBITING INTERLEAVING OR CAVE-IN AMONG TABLE TEXT COLUMNS RESULTING FROM COLUMN INSERTION

Gary R. Horn, and Kenneth O. Shipp, Jr., both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 24, 1981, Ser. No. 305,254
Int. Cl.³ B41J *25/18*
U.S. Cl. 400—279 **4 Claims**



1. In the insertion of a first-text column into a tab-stop positioned multicolumn table, the table having right-adjacent column text entries on the same row line as null entries of the first column, the column insertion being executable on an interactive stored program controlled word processing system, a method for inhibiting interleaving or cave-in among entries from dissimilar columns comprising the program executable steps of:

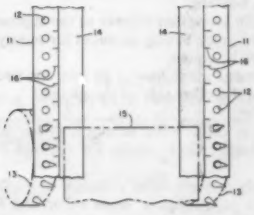
merging the row entries of the first column within the table in a single pass and including identifying each first column null entry and right adjacent text entry, and inserting a tab into the identified null-entry positions.

4,448,558

COMPUTER PRINTER PAPER SUPPORT

Joseph L. Weingarten, 1927 Oak Tree Dr. E., Dayton, Ohio 45440

Continuation of Ser. No. 300,869, Sep. 10, 1981, abandoned. This application Jun. 7, 1983, Ser. No. 502,027
Int. Cl.³ B41J *13/08, 13/12, 13/24*
U.S. Cl. 400—529 **4 Claims**



1. In a paper transport assembly for a printer having a pin type paper feed mechanism which includes a pair of spaced sprockets for advancement of various sizes and configurations of individual sheets of paper into said printer, said paper transport comprising:

a. a first flexible strip having along the length and near a first edge thereof a first plurality of regularly spaced holes for engaging the sprocket on a first side of said pin type feed mechanism, and a layer of non-setting and non-permanent adhesive means on said first strip along the length and near a second edge thereof, for removeably attaching said sheet along a first edge thereof to said first strip;

b. a second flexible strip having along the length and near a first edge thereof a second plurality of regularly spaced holes for engaging the sprocket on a second side of said pin type feed mechanism, and a layer of non-setting and non-permanent adhesive means on said second strip along the length and near a second edge thereof said first and second strips defining a width, between said first plurality of holes and said second plurality of holes of more than the width of said sheets of paper supportable thereon, for removably attaching said sheet along a second edge and opposite said first edge thereof to said second strip whereby said sheet is directly attached to and supported only on said first and second strip between said sprockets and is not otherwise provided with means for transport into said printer; and

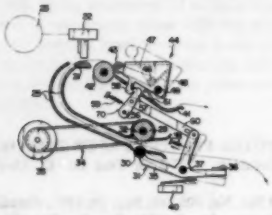
c. each of said layers of adhesive means having a width extending a predetermined distance from the second edges of said respective first and second strips towards the respective first and second pluralities of holes whereby said range of sizes and configurations of sheets transportable by said assembly is related to the combined width of said adhesive means.

4,448,559

PAPER GUIDE ARRANGEMENT FOR PRINTING APPARATUS

Susumu Matsuda, and Katuhiko Kawaguchi, both of Shizuoka, Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Jun. 10, 1982, Ser. No. 387,238
Claims priority, application Japan, Jun. 19, 1981, 56-90786[U]
Int. Cl.³ B41J *13/04*
U.S. Cl. 400—637.4 **7 Claims**



1. A paper guide arrangement for printing apparatus, comprising:

an apparatus housing;

a platen fixedly supported relative to the apparatus housing;

a paper supply guide having an outlet for supplying paper at one side of the platen;

a paper discharge guide having an inlet for discharging the paper from the other side of the platen;

a drive source;

a paper supply drive roller arranged in operative relation with the paper supply guide for rotation by the drive source;

a paper supply contact roller arranged in confronting relation to the paper supply drive roller and first support means for movably supporting the paper supply contact roller into and out of rolling contact with the paper supply drive roller;

a paper discharge drive roller arranged in operative relation with the paper discharge guide for rotation by the drive source;

a paper discharge contact roller arranged in confronting relation to the paper discharge drive roller and second support means for movably supporting the paper discharge contact roller into and out of rolling contact with the paper discharge drive roller; and

an operating mechanism including the first and the second support means for controlling the drive source to rotate the paper supply drive roller when the paper supply contact roller is brought by the first support means into rolling contact with the paper supply drive roller, and to stop the rotation of the paper supply drive roller by the drive source when the paper supply contact roller is removed by the first support means from the paper supply drive roller, and wherein the first and the second support means are arranged to cooperate so that the paper discharge contact roller retracts from the paper discharge drive roller when the paper supply contact roller is brought into rolling contact with the paper supply drive roller.

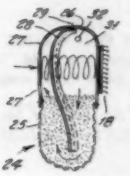
4,448,560

ROSIN BAG AND TOWEL ATTACHED TOGETHER

Donald R. Monaco, Jr., 316 Stump Rd., North Wales, Pa. 19454

Filed Jan. 11, 1983, Ser. No. 457,253
Int. Cl.³ A44B *13/00*
U.S. Cl. 401—200 **1 Claim**

1. An article of manufacture for rosining and wiping the hands of an athlete, comprising, in combination, a towel unit and a bag unit, detachably attached together by loop pile fastener means, said towel unit including a towel of terry, and said bag unit including a bag containing rosin powder; said bag also including means for being kneaded selectively in a hand or being pushed for blowing a quantity of said rosin powder at said hand; said means comprising said bag, being made of an upper portion of non-porous flexible plastic sheeting material stitched to a lower portion of loose woven fabric, a plurality of



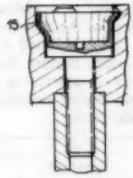
large holes through the front side of said upper portion, a flap inside said bag being threaded on a horizontal compression coil spring between the rear side of said upper portion and said upper portion front side, and said flap forming a rear chamber and a front chamber inside said bag which communicate with each other beneath a lower edge of said flap.

4,448,561

SCREWED SAFETY ASSEMBLY

Jacques Le Pargneux, Lyons, France, assignor to Framatome, Courbevoie, France

Filed Aug. 29, 1980, Ser. No. 183,563
Claims priority, application France, Sep. 19, 1979, 79 23312
Int. Cl.³ F16B *35/04*
U.S. Cl. 403—19 **1 Claim**



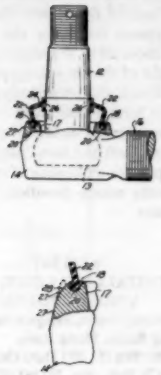
1. A screwed safety assembly for an easily dismountable assembly of a nuclear reactor, comprising a screw (12) the head (13) of which engages in a smooth seating (4) in a first part to be assembled (1), and the threaded shank of which engages a mating threaded portion of a second part to be assembled (2), said head of said screw comprising a deformable portion consisting of a thin external cylindrical ferrule (15), and said seating (4) of said screw head comprising, over a portion only of its periphery, at least one widened portion (6) of larger diameter into which a corresponding portion of said deformable ferrule (15) penetrates upon being deformed by expansion, said seating (4) of said screw head also comprising a circular groove (10) formed at the level of the upper edge of said deformable ferrule (15) between said at least one widened portion (6) and leading thereinto, in such manner that, when said ferrule is deformed by expansion, at least a portion of said upper edge penetrates into said groove (10) between said at least one widened portion (6), whereby said head (13) of said screw (12) is retained in said seating (4) in the event of fracture of said screw (12), the deformability of said ferrule (15) being sufficient to permit disengagement of said assembly merely by unscrewing, the portions of said ferrule (15) which were expanded then being deformed in the opposite direction.

4,448,562

BELLOWS SEAL FOR BALL AND SOCKET JOINTS

John A. Rose, Ypsilanti, Mich., assignor to O & S Manufacturing Company, Whitmore Lake, Mich.

Filed Jan. 7, 1982, Ser. No. 337,665
Int. Cl.³ F16C 11/00; F16D 1/12
U.S. Cl. 403—134 6 Claims



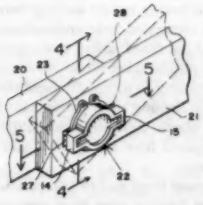
1. In a ball and socket joint comprising a ball and socket in mutual swivelling sliding engagement, said ball having a stud integrally formed therewith projecting outwardly through one end of said socket, and means holding said ball in said socket, the improvement comprising an annular groove disposed around the exterior periphery of said socket at said end of the socket from which said stud projects, said annular groove having a pair of lateral walls, and a resilient tubular body disposed around said stud, said resilient tubular body having an open end stretched around said stud and another open end provided with an integral reinforcing bead fitted within said annular groove, wherein said annular groove is partially closed by at least one lateral wall of said groove being bent over and folded over said bead such as to hold said bead within said groove.

4,448,563

PIVOTAL RIVET ASSEMBLY

Robert H. Zankl, 5410 Banyan Dr., Miami, Fla. 33156

Filed Sep. 12, 1980, Ser. No. 186,827
Int. Cl.³ F16C 11/00
U.S. Cl. 403—161 4 Claims



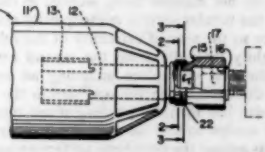
1. A pivotal rivet assembly swingably securing a rivet member to a companion member comprising, in combination, a first flat metal bar, a second flat metal bar adapted to be pivotally interconnected in face-to-face relation with respect to said first flat metal bar for relative swinging motion and having a round opening and a pair of diametrically-opposed recesses communicating with said round opening, a rivet having a cylindrical rivet head, a reduced diameter rivet shank integrally formed with and extending coaxially outwardly of the underside said rivet head, the outer end of said shank being fixedly riveted to said first flat metal bar, the juncture of said rivet head with said rivet shank defining an annular shoulder lying in a plane perpendicular with the longitudinal axis of said rivet head and said shank, an outer end portion of said cylindrical rivet head being integrally formed with a pair of diametrically-opposed lugs the under-surfaces of which lie in a common plane parallel with said plane of said annular shoulder, the axial distance between said plane of said annular shoulder and said plane of said underside of said lugs being somewhat greater than the thickness of said second flat metal bar to be swingably secured, the peripheral size and shape of said opening and said opening recesses being complemental with the outer peripheral shape of said outer end portion of said rivet head with its said integral lugs to permit passage therethrough of said rivet head upon assembly or disassembly of said first and second flat metal bars, and a resilient arcuate member receivable in embracing relation about said rivet shank between the undersides of said rivet head lugs and outer surface portions of said second flat metal bar fitted over said rivet head.

4,448,564

RETAINING MEANS FOR IMPACT DRIVE SOCKET

Stanley J. Orszulak, Springfield, Mass., assignor to Easco Corporation, Baltimore, Md.

Filed Apr. 13, 1983, Ser. No. 484,618
Int. Cl.³ B25G 3/00
U.S. Cl. 403—318 3 Claims



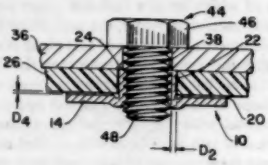
1. In combination with a socket carried by the drive shank of a power-operated tool, wherein the socket has at least one radial bore formed therein, wherein the shank has a transverse bore formed therein in communication with the radial bore in the socket, and wherein a locking pin is received mutually within the radial bore and transverse bore, respectively, the improvement in socket retaining means comprising a sleeve carried by the socket and having a normal position covering the radial bore therein, thereby retaining the pin, resilient means biasing the sleeve in its normal position, and means for moving the sleeve axially against the bias of the resilient means and into an alternate position to uncover the radial bore in the socket, whereby the pin may be removed to remove the socket from the shank, wherein the resilient means comprises a split ring, the socket having an external annular groove receiving the ring, the ring having a portion protruding radially of the external groove, and the sleeve having a pair of spaced-apart internal annular grooves formed therein, whereby the ring is received in one of the internal grooves in the sleeve in the normal position of the sleeve, and whereby the sleeve may be pushed manually to compress and ride over the ring, whereby the ring will be received in the other internal annular groove in the sleeve in the alternate position thereof, thereby providing a two-position detented action for the sleeve.

4,448,565

STRESS RELIEVING NUT MEMBER

Francis C. Peterson, St. Charles, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Mar. 17, 1982, Ser. No. 359,004
Int. Cl.³ F16B *5/02*
U.S. Cl. 403—408 **6 Claims**



1. In a joint designed to clamp a first workpiece to a second, relatively fragile workpiece, the combination of a nut member including a tubular section of predetermined outer diameter and axial length, the tubular section defining first and second extremities, a generally planar, radially extending flange extending from a region adjacent the first extremity, the second, relatively fragile workpiece being of predetermined thickness and including at least one aperture of predetermined transverse dimension and axial dimension sufficient to receive the tubular section of predetermined outer diameter but not appreciably greater than said predetermined outer diameter, the aperture in the fragile workpiece defining first and second extremities generally corresponding to the relative location of the first and second extremities of the tubular section, adhesive securement means interposed between the flange and the planar surface of the fragile workpiece surrounding the at least one aperture, the adhesive joint thus formed being spaced radially, slightly beyond the aperture, rim means integrally interconnecting the annular flange and the first extremity of the tubular section to space the radial innermost region of the planar flange radially from the first extremity as well as axially toward the second extremity, the nut member being secured to the fragile workpiece with the tubular section telescopically associated within the aperture so the second extremity of the tubular section is spaced slightly inwardly from the second extremity of the aperture, the first workpiece including an aperture of less transverse dimension than the aperture in the second workpiece and also less than the predetermined outer diameter of the tubular section so that the second extremity of the tubular section abuts against the peripheral surface around the aperture in the first workpiece when the nut is threadingly associated with a mating externally threaded member and clamping forces applied to the joint while the clamping forces are substantially isolated from the second fragile workpiece due to the layer of adhesive and the spring loaded tubular section so as to create a column between the first workpiece and nut member.

4,448,566

METHOD OF MAKING A LOAD BEARING SURFACE USING PHOSPHOGYPSUM AND FLYASH

H. Hobson King, Richmond, Va., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 12, 1982, Ser. No. 441,145
Int. Cl.³ E01C *7/06, 7/32*
U.S. Cl. 404—31 **17 Claims**

1. A method of producing a load bearing surface disposed on a subgrade, comprising the steps of:

(a) spreading a layer of phosphogypsum having a predetermined thickness over the surface of the subgrade;

(b) spreading a layer of flyash over the surface of said layer of phosphogypsum in an amount from about 10 to 30 percent by weight based upon the total weight of the phosphogypsum and flyash;

(c) mixing said flyash and phosphogypsum and compacting said mixture to form a subbase layer;

(d) spraying water over the surface of said subbase layer until the layer is moist and soft and then compacting said layer;

(e) repeating step (d) for a plurality of cycles until the materials are intimately mixed, densified, and the layer is saturated with water;

(f) spreading a layer of phosphogypsum having a predetermined thickness over the surface of said subbase layer;

(g) spreading a layer of flyash over the surface of said layer of phosphogypsum overlying the subbase layer in an amount from about 20 to 50 percent by weight based upon the total weight of the phosphogypsum and flyash;

(h) mixing said flyash and phosphogypsum and compacting said mixture to form a base layer;

(i) spraying water over the surface of said base layer until the layer is moist and soft and then compacting said layer; and

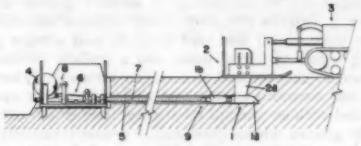
(j) repeating step (i) for a plurality of cycles until the materials are intimately mixed, densified, and the layer is saturated with water.

4,448,567

METHOD FOR INSTALLING LINES, PIPES OR CABLES UNDERGROUND

Yutaka Tsuda, Kurume, Japan, assignor to Pipe Master International Ltd., Hong Kong, Hong Kong

PCT No. PCT/JP80/00075, 371 Date Oct. 1, 1981, 102(e) Date Oct. 1, 1981, PCT Pub. No. WO81/02317, PCT Pub. Date Aug. 20, 1981
PCT Filed Apr. 15, 1980, Ser. No. 309,968
Claims priority, application Japan, Feb. 5, 1980, 55-12804
Int. Cl.³ E02B *13/00;* **E02D** *29/10;* **E02F** *5/10;* **E03F** *3/06*
U.S. Cl. 405—43 **2 Claims**



1. Method for efficiently installing various lines, pipes or cables underground comprising;

(i) disposing a boring means underground, said boring means being movable in a desired direction so as to form an elongated hole underground,

(ii) connecting a front end of a plastic tube formed from a flat plastic sheet to a rear end of said boring means,

(iii) connecting a front end of a hauling rope to said rear end of said boring means through said plastic tube,

(iv) propelling said boring means underground so as

(a) to form said elongated hole underground,

(b) to unreel said flat plastic sheet, to form said plastic tube from said flat plastic sheet while preventing said plastic tube from returning to to said original plastic flat sheet,

(c) to unreel said hauling rope within said plastic tube,

(v) installing said plastic tube and said hauling rope in and along said elongated hole along with said propelling of said boring means,

(vi) disconnecting said front end of said plastic tube and said front end of said hauling rope from said rear end of said boring means,

(vii) connecting a front end of a desired line, pipe or cable to a rear end of said installed hauling rope, and

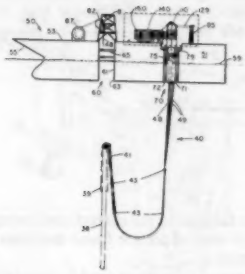
(viii) pulling only said hauling rope in and along said plastic tube thus installing said line, pipe or cable in and along said plastic tube, whereby any kind of size of lines, pipe or cable having a diameter less than said plastic tube can be installed in said plastic tube by being hauled through said plastic tube by said hauling rope.

4,448,568

MARINE SURFACE FACILITY WORK STATION FOR SUBSEA EQUIPMENT HANDLING

Larry L. Gentry, Sunnyvale; Herbert H. Moss, Cupertino, both of Calif., and Narayana N. Panicker, Grand Prairie, Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jun. 22, 1982, Ser. No. 391,038
Int. Cl.³ E21B *17/01*; F16L *1/04*
U.S. Cl. 405—169 **38 Claims**



1. An offshore process vessel, having an elongated hull and a main deck, for performing subsea service functions on a deepwater production riser system without major equipment support, comprising:

A. a pair of moonpools extending vertically from said main deck to an open bottom end below water level;

B. below-deck storage facilities communicating with at least one of said moonpools; and

C. cooperatively interacting feed and retrieval means at each said moonpool for:

(1) introducing a plurality of service hoses and high-pressure hoses into the water beneath said vessel,

(2) keelhauling and slinging said hoses between said moonpools,

(3) selectively working on both ends of said hoses,

(4) equipping said hoses with selected component parts to form a flowline bundle as a catenary between said moonpools and beneath said vessel, and

(5) lowering the intake end of said flowline bundle from one said moonpool to said riser system and making connections thereto, while the discharge end of said flowline bundle remains secured to a removable plug within the other said moonpool.

4,448,569

LIFT SLING EMPLACEMENT DEVICE

Donald J. Hackman, Columbus; Don W. Caudy, Dublin, both of Ohio; Robert L. Wernli, San Diego, Calif., and Carl S. Albro, Worthington, Ohio, assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 22, 1981, Ser. No. 276,416
Int. Cl.³ B63C *11/52*
U.S. Cl. 405—190 **18 Claims**

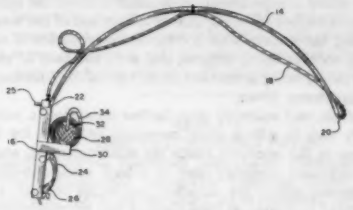
1. A device for enabling the lifting of an object comprising:

a support frame;

an elongate tubular member in slideable engagement with said support frame, said tubular member having a first end and a second end;

a hose having a first end connected to said tubular member first end and having a second end secured to said support frame;

a strap having a first end connected to said tubular member second end and having a second end secured to said support frame; and



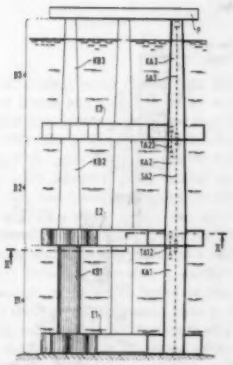
a cord having first and second ends, said cord first end being secured to said support frame.

4,448,570

METHOD OF CONSTRUCTING A CONCRETE OFF-SHORE STRUCTURE MORE THAN 200 M HIGH STABILIZED ON THE SEA BED BY ITS OWN WEIGHT

Jean-Claude Berthin, Mennecy, France, assignor to Sea Tank Co., Rungis, France

Filed Sep. 22, 1981, Ser. No. 304,498
Claims priority, application France, Oct. 21, 1980, 80 22443
Int. Cl.³ E02B *17/00*
U.S. Cl. 405—204 **2 Claims**



1. A method of constructing an off-shore concrete structure which stands on the sea floor in depths of more than 200 m and is stabilized thereon by its own weight, the method comprising the following steps:

prefabricating a floating unit comprising a compartmented base with hollow columns projecting upwardly therefrom and floating said unit at a sheltered site by the sea;

transporting said floating unit to a final site at sea; and

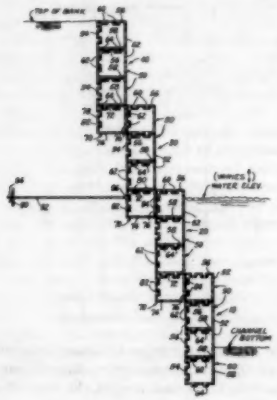
sinking the unit over its final site by progressively filling the compartments and the columns with water, to cause the base to rest on the sea floor;

the improvement wherein the prefabrication step comprises constructing a succession of units each constituting one storey of the support structure, the succession including at least a bottom storey and a top storey, and each storey comprising a horizontal polygonal compartmented base with vertical hollow columns of equal height disposed at the corners of the base polygon by forming said bases and said columns of concrete reinforced with longitudinal, storey-prestressing cables under tension, said cables being located in the column walls and extending over the full height of each storey;

and wherein the floating and transporting steps comprise:

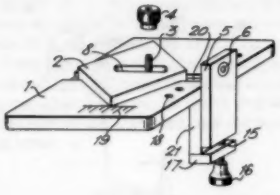
floating each of the storeys at the prefabrication site;
transporting each storey to an assembly site at sea;
tilting each of the storeys at the assembly site by progressively filling compartments in the base to cause the storey to float with two of its columns at the surface of the water;
assembling the storeys with corresponding columns of successive storeys being aligned, and with the base of each upper storey being assembled to the tops of the columns of the next storey down;
and wherein said assembly step further comprises a preassembly step in which metal members provided for the purpose in the assembly zones are interconnected, and a final structure assembly step in which interconnecting pre-stressed cables are installed, put under tension, and embedded in mortar, at least some of said interconnecting cables being longitudinally disposed and extending on either side of the junction plane between two successive storeys beyond the ends of the longitudinal, storey-prestressing cables in such a manner as to insure continuous pre-stressing over the entire height of the structure; and
transporting the structure thus assembled in the horizontal position from the assembly site to the final site;
and tilting the assembled structure to bring it into the vertical before said step of sinking it.

4,448,571
PANEL SYSTEM FOR SLOPE PROTECTION
Robert Y. Eckels, 4035 Trey Dr., Houston, Tex. 77084
Filed Nov. 30, 1981, Ser. No. 325,751
Int. Cl.³ E02D *29/02*
U.S. Cl. 405—284 **4 Claims**



1. A system of panels and accessory anchoring devices for providing erosion protection to the slopes of a watercourse, including:
a plurality of panels of a weight such that each is man portable, and designed to be placed vertically one upon the other along a watercourse slope;
said panels each being made of a plurality of hollow sections designed and constructed to mate with each other, each of said sections being extruded in a hollow rectangular configuration from light weight material, the mating surfaces of the sections carrying interlocking, longitudinally extending tongue and groove means thereon, and the hollow interiors thereof accommodating the reception of other material and items within the sections and the panels formed thereby;
a plurality of deadman elements, for burying in the earth fill placed behind each panel; and
means connecting said deadman elements with the rear sides of said panels, whereby when said deadman elements are buried in the earth fill said panels will be secured in position.

4,448,572
PICTURE FRAMING
Cyril A. Gill, 36 Grove Rd., Eastbourne, Sussex, England
Filed Sep. 13, 1982, Ser. No. 417,130
Int. Cl.³ B23B *47/28*
U.S. Cl. 408—115 R **10 Claims**



1. Apparatus for facilitating the correct positioning of dowel holes in the mitered ends of picture frame moldings which are to be joined comprising:
a base plate arranged to be positioned horizontally when in use, said base plate having a planar upper surface and an elongated guide groove formed in said upper surface, said groove having an axis;
slide means mounted from said base plate adjacent one edge thereof, said slide means having an adjustable portion which defines a plane perpendicular to the plane of said base plate upper surface, said slide means adjustable portion intersecting an extension of the axis of said base plate groove;
a drill guide mounted in said slide means adjustable portion, said drill guide having an axis, said drill guide being mounted so that the axis thereof is parallel to the plane of said base plate upper surface;
means for imparting motion to said slide means adjustable portion to thereby adjust the position of said drill guide axis relative to said base plate upper surface;
a moulding positioning member extending above and slidably mounted on the upper surface of said base plate, said positioning member engaging said guide groove and having at least a pair of guide faces thereon, each of said guide faces lying in a plane which intersects said drill guide axis at an angle of substantially 45°, the intersection of said guide faces defining a line which is intersected by and transverse to an extension of said drill guide axis; and
adjustment means, said adjustment means allowing movement of said positioning means along said guide groove to vary the spacing between said slide means and positioning member while maintaining the angular relationship between the axis of said drill guide and the planes in which said positioning member guide faces lie, said adjustment means engaging said positioning member and being operable to retain said positioning member at a selected location.

4,448,573
SINGLE-STAGE, MULTIPLE OUTLET CENTRIFUGAL BLOWER
Joseph P. Franz, Erie, Pa., assignor to General Electric Company, Erie, Pa.
Filed Mar. 25, 1982, Ser. No. 361,958
Int. Cl.³ F04D *29/40*
U.S. Cl. 415—206 **7 Claims**

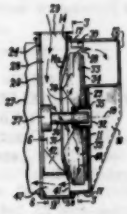
1. A housing for a single-stage, multiple outlet centrifugal blower, comprising:
a. a relatively stationary casing adapted to enclose a rotatable impeller, said casing having a generally planar barrier on the intake side of the impeller, a generally spiral ple-

num on the other side of the impeller, and means including a curvilinear wall for joining said plenum to the perimeter of said barrier;

b. said barrier having a first port in a central region thereof to provide a fluid inlet in the vicinity of the eye of the impeller;

c. said plenum having an exit section that provides a first fluid outlet from said casing and having an opening in its inboard side that extends along a predetermined limited portion of the periphery of the impeller; and

d. a second fluid outlet comprising a second port in said barrier, said second port being located in a generally arcuate region of said barrier near the periphery of said



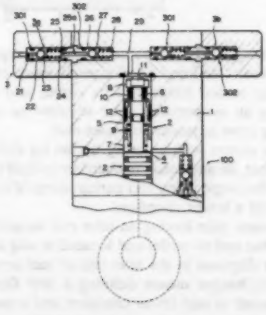
impeller but displaced from said predetermined limited portion of the periphery so that said second port is out of register with said opening of said spiral plenum, the pressure and volume flow rate of fluid discharging through said second outlet being dependent on the shape and cross-sectional area of said second port and on the fluid backpressure on the discharge side of said second port and being substantially independent of the pressure and volume flow rate of fluid discharging through said first outlet, whereby the downstream backpressure of the fluid discharged from either one of said outlets will not significantly affect the flow of fluid discharging from the other outlet.

4,448,574

EXTRA-HIGH PRESSURE WATER PUMP

Sachio Shimizu, Tokyo, Japan, assignor to Aiko Engineering Co. Ltd., Tokyo, Japan

Filed Jan. 25, 1982, Ser. No. 342,413
Int. Cl.³ F04B *21/04*
U.S. Cl. 417—488 **9 Claims**



1. An extra high pressure water pump comprising:

a cylinder barrel;

a cylinder head extending across one end of said cylinder barrel;

a double piston in said cylinder barrel comprising;

a main reciprocally driven piston;

a piston rod rigidly secured to and projecting from the main piston;

an additional lubricating oil piston slidable over an additional piston rod;

a lubricating oil chamber in said barrel between said main piston and said additional lubricating oil piston;

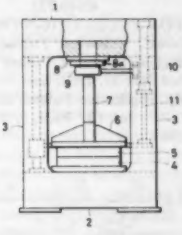
a water chamber in said barrel between said lubricating oil piston and said one end of said cylinder barrel.

4,448,575

TIRE VULCANIZING PRESS

Takaomi Hanyu; Nobuhiko Irie; Akira Hasegawa; Teruaki Muta; Katsuyoshi Sakaguchi; Toshihisa Ikeda; Yoshiharu Itayama, and Akira Nakahara, all of Nagasaki, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Japan

Filed Jul. 12, 1983, Ser. No. 513,065
Claims priority, application Japan, Jul. 13, 1983, 58-121572
Int. Cl.³ B29H *5/02, 5/08*
U.S. Cl. 425—47 **5 Claims**



1. A tire vulcanizing press of the type including an upper frame, a lower frame and side frames by way of which said upper frame and said lower frame are integrally connected to one another, wherein a lower die half is fixedly mounted on the lower frame and an upper die half is fixedly secured to a raising and lowering table adapted to be raised up or lowered by means of a raising and lowering means fixedly attached to the upper frame in such a manner that the upper die half is displaced away from or toward the lower die half, characterized in that the raising and lowering table has a vertically extending member fixedly mounted thereon, a working cylinder is secured to the bottom of the upper frame having a piston reciprocally mounted therein and a distance plate is disposed between the working cylinder piston and the vertically extending member in such a manner as to be displaced away from the operative position to the inoperative position and vice versa, the working cylinder and piston both comprising a doughnut-shaped cylinder having a through hole formed at the central part thereof.

4,448,576

PASTRY AND DUMPLING MAKER

William Y. Liu, 286 Clinton Ave., Brooklyn, N.Y. 11205

Filed Feb. 4, 1983, Ser. No. 463,840
Int. Cl.³ A21C *9/06, 11/00*
U.S. Cl. 425—89 **14 Claims**

1. A pastry and dumpling maker comprising:

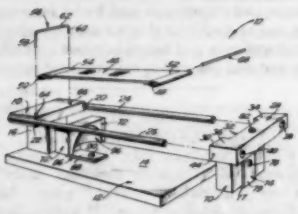
a pair of cooperating first and second mold sections defining therebetween a particular shape of a pastry to be formed;

first means for relatively moving said mold sections into cooperative engagement with each other to form the pastry, and for subsequently separating said mold sections after a shaped pastry is formed;

a flexible strip of material defining a strap for supporting a dough skin with a filling of food ingredients thereon;

second means for suspending said flexible strap above said mold sections, and for lowering a center portion of said flexible strap with the dough skin and filling supported

thereon between said mold sections as said mold sections are moved into cooperative engagement, whereby the



dough skin is folded over the filling and sealed into the particular pastry shape, the shaped pastry being removable upon separation of said mold sections.

4,448,577

DEVICE FOR PRODUCTION OF INERT GASES

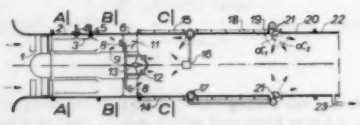
Marian Paczkowski, Katowice, Poland, assignor to Glowny Instytut Gornictwa, Katowice, Poland

Filed Jan. 29, 1982, Ser. No. 344,101

Claims priority, application Poland, Jan. 29, 1981, 229466

Int. Cl.³ F23L *9/00*

U.S. Cl. 431—190 **1 Claim**



1. In a device for producing inert gases by liquid fuel combustion and diffusion of combustion products with water, useful particularly to prevent and extinguish underground fires, comprising a turbo-compressor and tightly connected multiple stage chambers for preliminary reduction of oxygen, fuel atomization, after-burning, mixing and evaporation, the improvements which are characterized by providing a first cylindrical shaped inlet combustion chamber immediately downstream of said turbo-compressor, and including a circumferential array of burner tubes extending longitudinally of said chamber, each tube including a fuel injector means and downstream thereof a sparking means for combustion of fuel introduced by said fuel injector means, providing preliminary reduction of oxygen in said flame tubes, a second cylindrical chamber attached downstream of said first chamber and including fuel atomization means in the form of two circumferential rows of atomizers, one of which consists of a series of fuel nozzles facing upstream toward the outlet of said first chamber and said flame tubes therein, a second set of atomizers facing downstream parallel to flow through said second chamber, therebeing included a cylindrical internal tube mounted within said second chamber by means of radially extending partition means connected to the circumference of said second chamber and defining a series of axially arranged channels each containing one of said second set of atomizers therein, a third cylindrical chamber connected to the downstream end of said second chamber, therebeing a further set of supplemental fuel atomizers arranged in a concentric pattern around the central axis of said third chamber, sparking means arranged in the center of said third chamber, a fourth cylindrical chamber connected to the downstream end of said third chamber and providing a preliminary cooling means for exhaust gases flowing therethrough, said fourth chamber including a cylindrically arranged water jacket means for preliminary cooling of said gases, a centrally located water nozzle mounted between said third and fourth chambers for supplying a spray of water facing upstream of said flow toward said third chamber, and a circumferentially arranged spray diffuser means in the form of a ring mounted between said third and fourth chambers and also facing substantially upstream of said flow to supply with said centrally arranged nozzle, a pattern of water for preliminary cooling of said gases, a fifth cylindrical chamber connected to the downstream end of said fourth chamber, a circumferentially mounted set of water nozzles between said fourth and fifth chambers facing partially downstream of said direction of flow therethrough, including individual nozzles mounted at an angle with respect to the cylindrical chamber and defining thereby a spray pattern facing inwardly as well as downstream of said flow of gases, and a chamber connected to the downstream outlet end of said fifth chamber, whereby exhaust gases passing through said device provide for evaporation of water and forming of inert gases at the outlet end thereof.

4,448,578

CURING OVEN FOR ENAMELED WIRE AND CONTROL SYSTEM THEREFOR

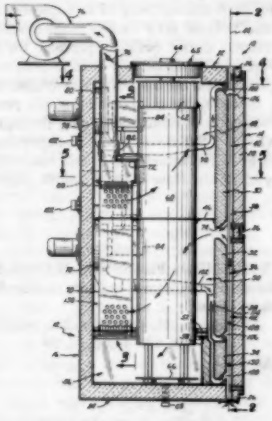
George A. Brunet, Hennepin County, and Richard J. Cowan, Dakota County, both of Minn., assignors to Acrometal Products, Inc., Minneapolis, Minn.

Continuation of Ser. No. 373,797, Apr. 30, 1982, abandoned.

This application Aug. 25, 1983, Ser. No. 526,276

Int. Cl.³ F27B *9/28*; F24H *1/00*; C21D *9/54*

U.S. Cl. 432—72 **25 Claims**



23. A curing oven for coated product, comprising:

casing means defining an elongated work chamber for receiving coated product to be cured, said work chamber having an evaporating zone adjacent an inlet end and a curing zone adjacent an outlet end;

partition means within casing means for defining an upper chamber, an intermediate chamber in fluid communication with the evaporating and curing zones of said work chamber, and a lower chamber;

a combustor tube having an inlet end located in said upper chamber and an outlet end located in said lower chamber;

a burner disposed in the inlet end of said combustor tube;

a heat exchanger means defining a first flow path fluidly connected to said lower chamber, and a second flow path fluidly interconnecting said upper and intermediate chambers such that process air from the work chamber is preheated before oxidation by said burner;

means defining a cold air intake in fluid communication with air outside said casing means;

means fluidly connected to said first flow path of said heat exchanger means and said cold air intake means for mixing

outside air and combustion gases to separate predetermined temperatures and directing the resultant mixtures into the curing and evaporating zones of the work chamber; and

means connected to the first flow path of said heat exchanger means for exhausting hot air from the oven.

4,448,579

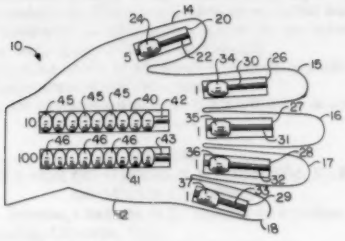
ARITHMETIC INSTRUCTION APPARATUS

Richard A. Currie, 833 S. Burgess Dr., Baton Rouge, La. 70815

Filed May 7, 1982, Ser. No. 376,127

Int. Cl.³ G09B *19/02*; G06C *1/00*

U.S. Cl. 434—203 **16 Claims**



1. An educational teaching device formed in the shape of a human hand comprising a frame in the shape of a human hand having a palm, a thumb and four fingers, the frame having a first groove in the palm, a second groove in the thumb, a third groove in the first finger, a fourth groove in the second finger, a fifth groove in the third finger, and a sixth groove in the fourth finger, said grooves having one or more slidable beads therein which can be manipulated to perform various arithmetic operations.

4,448,580

PROCESS FOR PRODUCING α-METHYL STYRENE-METHYL METHACRYLATE-ACRYLONITRILE THERMOPLASTIC RESIN

Mitsuo Abe; Syuji Tsuchikawa; Teizo Fukuta, all of Yokkaichi, and Tsugio Asakawa, Suzuka, all of Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Filed Sep. 23, 1982, Ser. No. 421,777

Claims priority, application Japan, Sep. 29, 1981, 56-154150

Int. Cl.³ C08L *55/02, 33/12*; C08F *257/02*

U.S. Cl. 525—71 **16 Claims**

1. A process for producing a thermoplastic resin having an excellent thermal stability and a high heat resistance, which comprises (1) the first step of initiating polymerization of 65–85 parts by weight of a monomer mixture (A) consisting of 50–85% by weight of α-methylstyrene, 3–20% by weight of methyl methacrylate, 2–20% by weight of acrylonitrile, and 0–25% by weight of an aromatic alkenyl compound other than α-methylstyrene, (2) the second step of then adding continuously or intermittently 2–15 parts by weight of a monomer (B) consisting of acrylonitrile or a mixture thereof with an aromatic alkenyl compound other than α-methylstyrene, and continuing the polymerization and (3) the third step of further adding 5–25 parts by weight of a monomer (C) consisting of an aromatic alkenyl compound, other than α-methylstyrene, or a mixture thereof with acrylonitrile when the polymerization reaches 60% or more based on the total of the monomers (A) and (B) used, and continuing the polymerization to complete the polymerization, the total amount of monomers (A), (B), and (C) being 100 parts by weight.

4,448,581

PROCESS FOR WASHING DYED OR PRINTED TEXTILE MATERIALS

Peter Fennekels, and Ernst Waltmann, both of Krefeld, Fed. Rep. of Germany, assignors to Girmes-Werke AG, Grefrath, Fed. Rep. of Germany

Filed Apr. 14, 1983, Ser. No. 484,709

Claims priority, application Fed. Rep. of Germany, Apr. 15, 1982, 3213840

Int. Cl.³ B08B 7/04, 3/00; C11D 9/42, 1/02

U.S. Cl. 8—137 16 Claims

1. A process for washing dyed or printed textile materials comprising:

uniformly applying a foam to one side of the textile material, said foam comprising at least one surface active agent, and a compound soluble in the foam-forming liquid having substantially no affinity to the fibers of the textile material, and having a high adsorption capacity for the substances to be washed out of the textile material;

applying steam to the textile material immediately following the application of the foam, and

rinsing the textile material after said application of steam.

4,448,582

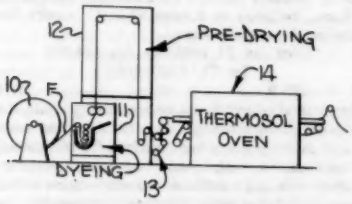
PROCESS FOR CONTINUOUS THERMOSOL DYEING OF TEXTILE FABRICS

David F. Johnson, Charlotte, N.C., assignor to American Artos Corporation, Charlotte, N.C.

Filed Feb. 1, 1982, Ser. No. 344,405

Int. Cl.³ D06B 5/08, 21/00

U.S. Cl. 8—149.1 4 Claims



1. In a process for the continuous thermosol dyeing of a textile fabric formed at least partially of synthetic fibrous material, said process including the steps of applying dyestuffs to the fabric and thereafter heating the fabric to fix the dyestuffs on the fibers, the improvement which comprises carrying out said heating step by directing the fabric onto an air permeable supporting conveyor and conveying the fabric supported on said conveyor longitudinally through an elongate heated oven while directing heated air downwardly through the fabric and through the underlying supporting conveyor and while at predetermined longitudinally spaced locations as the fabric travels through the oven directing heated air upwardly through the supporting conveyor and into impingement with the fabric so as to lift portions of the fabric from the supporting conveyor to permit free shrinkage and bulking of the fabric while avoiding distortion of the fabric or obtaining an undesirable ironed surface appearance.

4,448,583

STABLE AQUEOUS LIQUID COMPOSITION OF REACTIVE DYES CONTAINING β-SULFATOETHYLSULFONYL GROUPS

Anthony J. Corso, Coventry, R.I., assignor to American Hoechst Corporation, Somerville, N.J.

Filed Feb. 22, 1983, Ser. No. 468,513

Int. Cl.³ D06P 67/00; C09B 62/00

U.S. Cl. 8—527 12 Claims

1. An aqueous, liquid fiber-reactive dye composition which is stable to decomposition consisting essentially of 5 to 45% by weight of a water-soluble, fiber-reactive dyestuff having from 1 to 3 $-SO_2CH_2CH_2OSO_3H$ groups, or a mixture of such dyestuffs; 0 to 10% by weight of water-soluble inert inorganic salt; and 45 to 95% by weight of water; said liquid dye composition having a pH of about 2.5 to about 4.5 and being substantially free of buffer substances.

4,448,584

PROCESS FOR REMOVING SULFUR FROM COAL

George P. Masologites, Columbus, N.C.; Jui-Yuan Sun, South Holland, Ill.; Jin S. Yoo, Flossmoor, Ill., and Emmett H. Burk, Jr., Glenwood, Ill., assignors to Atlantic Richfield Company, Philadelphia, Pa.

Continuation of Ser. No. 944,435, Sep. 21, 1980, abandoned. This application Aug. 7, 1980, Ser. No. 175,983

Int. Cl.³ C10L 9/02

U.S. Cl. 44—1 SR 17 Claims

1. A process for reducing the sulfur and ash content of coal comprising the steps of:

(1) contacting coal particles containing ash and iron pyrite mineral matter with a promoting amount of at least one conditioning agent capable of modifying or altering the existing surface characteristics of the pyrite under conditions to effectuate alteration or modification of at least a portion of the contained pyritic sulfur, wherein the conditioning agent is an inorganic compound which can hydrolyze in water;

(2) separating the coal particles from at least a portion of the pyritic sulfur while surface characteristics are altered or modified; and

(3) recovering coal particles wherein the coal exhibits reduced sulfur and ash content.

6. The process of claim 1 wherein the conditioning agent is selected from the group consisting of aluminum oxide, aluminum hydroxide and mixtures thereof hydrolyzed in water forming an alumina gel.

4,448,585

PROCESS FOR FORMING STABLE COAL-OIL MIXTURES

Jin S. Yoo, Flossmoor, Ill., assignor to Atlantic Richfield Company, Philadelphia, Pa.

Filed Dec. 28, 1981, Ser. No. 334,691

Int. Cl.³ C10L 1/32, 9/02

U.S. Cl. 44—51 14 Claims

1. A process for providing a coal-oil mixture fuel slurry of enhanced stability comprising the steps of:

(1) contacting an aqueous slurry of coal particles containing ash and iron pyrite mineral matter with a promoting amount of at least one conditioning agent capable of modifying or altering the existing surface characteristics of the pyrite under conditions to effectuate alteration or modification of at least a portion of the contained pyritic sulfur;

(2) agglomerating the coal particles while said pyrite surfaces are altered or modified in an aqueous medium with hydrocarbon oil;

(3) separating coal hydrocarbon oil agglomerates from at least a portion of the iron pyrite mineral matter and ash; and

(4) mixing the separated coal hydrocarbon oil agglomerates with a quantity of fuel oil to form a coal-oil mixture fuel slurry of enhanced stability.

5. The process of claim 1 wherein the conditioning agent is selected from the group consisting of metal aluminates having the formula $M'_d(AlO_2)_e$ or $M'_f(AlO_2)_g$, wherein M' is Fe, Co, Ni, Zn, Mg, Pb, Ca, Ba or Mc; and de, e, f and g are whole numbers dependent upon the ionic valence of M'.

4,448,586
CORROSION INHIBITOR COMPOSITIONS FOR ALCOHOL-BASE FUELS

Charles F. Weidig, Grosse Pointe, Mich., assignor to Ethyl Corporation, Richmond, Va.

Filed Nov. 2, 1981, Ser. No. 317,573
Int. Cl.³ C10L *1/18*
U.S. Cl. 44—55 **17 Claims**

1. A liquid fuel for use in internal combustion engines comprising a major amount of a monohydroxy alkanol having from 1 to about 5 carbon atoms and a corrosion inhibiting amount of a mixture consisting essentially of (a) from about 5 to 95 parts of a mixture consisting essentially of 40 to 80 volume percent alkyl or alkenyl succinic acid and 20 to 60 volume percent of an ester of an alkyl or alkenyl succinic acid and a glycol containing 2 to 4 carbon atoms; wherein the alkyl and alkenyl groups in said acid and in said ester each contain about 8 to 30 carbon atoms, and (b) from about 95 to 5 parts of at least one polymerized unsaturated aliphatic monocarboxylic acid having about 16 to 18 carbon atoms per molecule.

4,448,587
SYNERGISTIC CETANE IMPROVER

James B. Hinkamp, Birmingham, Mich., and John V. Hanlon, Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed Mar. 28, 1983, Ser. No. 479,507
Int. Cl.³ C10L *1/22*
U.S. Cl. 44—57 **14 Claims**

8. A distillate fuel of the diesel boiling range containing a cetane number increasing amount of the synergistic combination of (a) about 5–95 weight percent of a C_4–C_{12} alkylnitrate, C_6–C_{12} cycloalkyl nitrate or mixtures thereof and (b) about 95–5 weight percent of an alkoxyalkyl nitrate of the formula

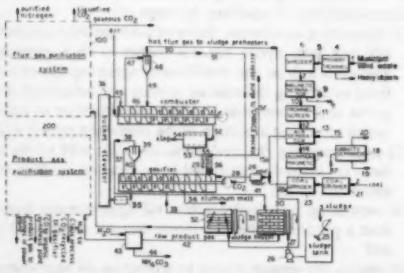
$$R—O—R'_nONO_2$$

wherein R is an alkyl containing 1–10 carbon atoms, R′ is a divalent alkylene group of 2–4 carbon atoms and n is an integer from 1–4.

4,448,588
INTEGRATED GASIFICATION APPARATUS

Shang-I Cheng, 17 Woodsend Dr., Matawan, N.J. 07747

Division of Ser. No. 173,169, Jul. 28, 1980, Pat. No. 4,353,713.
This application Apr. 20, 1982, Ser. No. 370,055
Int. Cl.³ C10J *3/20*
U.S. Cl. 48—99 **5 Claims**



1. A plant for the gasification of water and a carbon-containing substance consisting of coal alone or coal together with municipal waste, biomass or sewage sludge with comprises:

a substantially horizontally disposed cylindrical gasifier provided internally with conveyor means for substantially horizontally, displacing said carbon-containing substances and other solids from one end of said gasifier to the opposite end thereof;

first feeding means for feeding said carbon-containing substance into said gasifier at said one end thereof;

second feeding means for feeding calcined lime or dolomite into said gasifier at said one end thereof whereby said carbon-containing substance undergoes devolatilization and pyrolysis proximal to said one end thereof;

means for withdrawing a gas from the other end of said gasifier containing product gas components and means for separating components including carbon dioxide from said product gas components means for recycling, the separated carbon dioxide at least partially to said gasifier and further including means for distributing the carbon dioxide near the opposite end of the gasifier;

recovery means for recovering solids containing char and calcium carbonate from said other end of said gasifier;

a combustor connected to said recovery means for receiving the char and calcium carbonate and for burning said char at a temperature sufficient to effect decomposition of the calcium carbonate to CaO and CO_2, means for delivering the CaO to the second feeding means for feeding calcined line or dolomite to said gasifier; and

third feeding means for feeding water to said gasifier at a location intermediate said ends thereof to sustain a steam/-carbon reaction in said gasifier.

4,448,589
PYROLYTIC CONVERSION OF CARBONACEOUS SOLIDS TO FUEL GAS IN QUARTZ SAND FLUIDIZED BEDS

Liang-tseng Fan, and Walter P. Walawender, both of Manhattan, Kans., assignors to Kansas State University Research Foundation, Manhattan, Kans.

Filed Jan. 23, 1980, Ser. No. 114,698
Int. Cl.³ C10J *3/54*
U.S. Cl. 48—197 R **17 Claims**

1. The method of pyrolytically converting subdivided carbonaceous solids to a fuel gas in a fluidized bed containing quartz sand as the primary inert medium for transferring heat to said carbonaceous solids, said bed being operated under endothermic reducing conditions at a temperature sufficient to convert said solids but below the sintering temperature of said sand, wherein the improvement comprises forming said bed from a mixture of said quartz sand and an anti-agglomerating composition in particulate form for fluidization with said sand and said carbonaceous solids, at least 55% by weight of said bed being said quartz sand, said anti-agglomerating composition being selected from the class consisting of the carbonates and oxides of calcium, magnesium, and barium, and mixtures thereof, said bed containing from 1 to 45% by weight of said anti-agglomerating composition based on the combined weight of said sand and said composition, said bed being operated as a fluidized bed without the formation of aggregates which interfere with the bed fluidization while producing a fuel gas in said bed.

4,448,590
FLAP-TYPE ROTARY ABRASIVE DEVICE

Daniel J. Wray, Tujunga, and Alexis G. Regnier, Los Angeles, both of Calif., assignors to Standard Abrasives, Inc., Northridge, Calif.

Division of Ser. No. 910,319, May 30, 1978, Pat. No. 4,258,509.
This application Oct. 17, 1980, Ser. No. 198,082
Int. Cl.³ B24D *11/00*
U.S. Cl. 51—297 **4 Claims**

1. A method of fabricating a flap-type rotary abrasive device comprising an annular array of abrasive leaves having opposite side edges and base edges, said annular array having an inner surface formed by said base edges facing radially inward, each leaf having abrasive particles bonded to at least one face thereof, comprising the steps of:

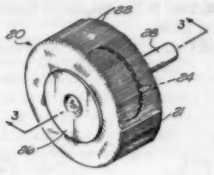
providing a plurality of leaves of flexible material, each leaf having abrasive particles bonded to at least one face thereof; arranging the plurality of leaves in a stack so that a face of each leaf having abrasive particles faces in one direction;

subjecting the stack to high compression substantially perpendicular to the leaf faces to cause successive leaves of the stack to adhere to one another by penetration of abrasive particles of each leaf into an adjacent leaf, thereby transforming the stack of leaves into a rigid block;

forming at least one straight line groove in the rigid block, the groove being substantially perpendicular to a base edge of each leaf;

filling said groove with a deformable adhesive;

loosening the leaves from face to face adherence to each other, each leaf defining a leaf of said array, the array of leaves being interconnected by said deformable adhesive at said base edges;



forming said loose array into a circular configuration defining a central bore the boundary of which is determined by said base edges;

providing two centrally disposed end caps one at each end of said bore, each end cap forming an annular passageway around the side edges adjacent to said base edges of the leaves, said passageway having at least one access aperture into said central bore;

disposing a spindle centrally of said bore; and

inserting a settable securing material having a liquid and a solid state into said central bore while in a liquid state to substantially fill said bore and flow through said access aperture and said annular passageways into contact with the side edges adjacent the base edges of said leaves so that said material penetrates slightly between said leaves at the side edges thereof adjacent said base edges, said securing material becoming solidified subsequent to insertion.

4,448,591

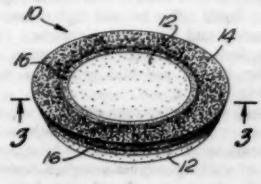
CUTTING INSERT HAVING UNIQUE CROSS SECTION

John M. Ohno, Plymouth, Mich., assignor to General Electric Company, Detroit, Mich.

Continuation-in-part of Ser. No. 226,604, Jan. 21, 1981. This application Dec. 16, 1981, Ser. No. 331,381

Int. Cl.³ C04B *35/56, 35/58*

U.S. Cl. 51—298 **8 Claims**



1. A process for producing a blank adapted to be mounted on a substrate to form a cutting insert, comprising the steps of:

preparing at least one crystal dispersion of super-hard crystals selected from at least one member of the group consisting of diamond and cubic boron nitride crystals and carbon black in a temporary binder;

preparing a core dispersion of carbon fiber, carbon black and filler in a temporary binder;

placing said at least one crystal dispersion and said core dispersion in a mold to respectively form at least one crystal dispersion layer and a core dispersion layer, said at least one crystal dispersion layer forming a rim about the periphery of said core dispersion layer on the upper surface thereof;

compacting said crystal and core dispersion layers with a chamfered plunger applied to the lower surface of said core layer to form an intermediate composite having a recess at said lower surface, thereby compressing said dispersions to a substantially uniform density throughout said intermediate composite;

heating said intermediate composite to allow for the removal of said temporary binder and the infiltration of liquefied silicon into said intermediate composite; and

sintering said intermediate composite to produce said blank.

4,448,592

ADSORPTIVE METHOD FOR THE SEPARATION OF A GAS MIXTURE

Gerhard Linde, Grünwald, Fed. Rep. of Germany, assignor to Linde AG, Wiesbaden, Fed. Rep. of Germany

Filed Aug. 17, 1982, Ser. No. 409,019

Claims priority, application Fed. Rep. of Germany, Aug. 18, 1981, 3132572

Int. Cl.³ B01D *53/04*

U.S. Cl. 55—68 **9 Claims**

1. A method of recovering at least two product fractions each highly enriched in a respective component of a gas mixture containing at least two such components, said method comprising the steps of:

separating a stream of said mixture into at least two partial streams; and

passing said stream separately through respective beds of respective adsorbents different from one another and selectively retaining at least one component from each of said mixture so that respective product fractions emerge from said adsorbents highly enriched in respective components of said mixture, each of said adsorbents for a particular one of said fractions having a composition such that it retains at least one component in which another of said fractions is enriched.

5. An adsorption system for separating a gas mixture of an incoming gas stream into product fractions rich in respective components of said mixture, said apparatus comprising at least two functionally interchangeable adsorbers adapted respectively to operate alternately in an adsorption mode and a desorption mode, each of said adsorbers comprising a plurality of parallel beds of different adsorbents each adapted to retain at least one component of said mixture and pass a product fraction rich in at least one other component of said mixture whereby said product fractions of the adsorbents of each adsorber are rich in different components of said mixture.

4,448,593

WATER AIR FILTER

Walter A. Spiers, 4000 E. Fletcher Ave., Apartment #J106, Tampa, Fla. 33612

Filed Jun. 14, 1982, Ser. No. 387,789

Int. Cl.³ B01D *47/02*

U.S. Cl. 55—227 **4 Claims**

1. A humidifying filter, comprising:

a container having a water reservoir therein;

a wick disposed in said container and having at least the lower portion thereof submerged in said reservoir;

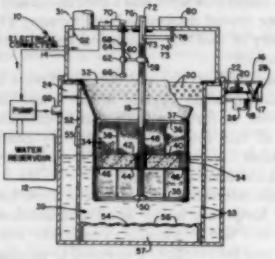
an air impermeable surround connecting in air tight fashion the upper perimeter of said wick with the perimeter of

said container at a location above the water level of said reservoir;

a wick support stretching said wick over an area;

a rod rotatably secured to said wick support;

a float threadably engaged on the lower portion of said rod;



an air inlet in the wall of said container positioned between the water level of said reservoir and the perimeter of attachment of said surround; and

an outlet conduit positioned on the upper portion of said container above the perimeter of attachment of said surround.

4,448,594

CANISTER FOR VOLATILE FUEL CONTROLLING DEVICE

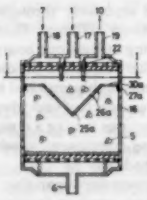
Tadashi Kozawa, Aichi, Japan, assignor to Aisan Industry Co., Ltd., Aichi, Japan

Filed Jan. 7, 1982, Ser. No. 337,651

Claims priority, application Japan, Jan. 27, 1981, 56-10580[U]

Int. Cl.³ B01D *39/00*

U.S. Cl. 55—387 **5 Claims**



5. A canister for a volatile fuel control device, comprising

a canister case containing therein an adsorbent of volatile fuel,

at least one volatile fuel inlet and a volatile fuel outlet for volatile fuel at one end of said canister case,

said at least one volatile fuel inlet being axially positioned on said canister case,

an air introduction port axially positioned with respect to said canister at the other end of said canister case for introduction of scavenging air into said canister case,

means comprising a conical baffle disposed in a portion of the interior of said canister case within a layer of said adsorbent for restricting the flow of said volatile fuel and air,

a separation cylinder extending vertically from an upper end of said canister case into an upper portion of said layer of adsorbent,

said conical baffle extending such that an outer circumferential edge of said baffle is positioned around an outer side of a downward vertical extension of the outer circumferential surface of said separation cylinder and is spaced close to an inner circumferential surface of said canister case and secured to said canister case to define a restricted passage between said inner circumferential surface of said canister case and said outer circumferential edge of said baffle for movement of both the volatile fuel and the scavenging air to the volatile fuel outlet,

said volatile fuel outlet being positioned substantially above said restricted passage between said inner circumferential surface of said canister case and said outer circumferential edge of said baffle,

said baffle is formed continuous without openings at portions thereof under said separation cylinder and with air vents at portions thereof radially outwardly below said separation cylinder, whereby the scavenging air desorbs the volatile fuel from the adsorbent passing through said air vents and said restricted passage to said volatile fuel outlet.

4,448,595

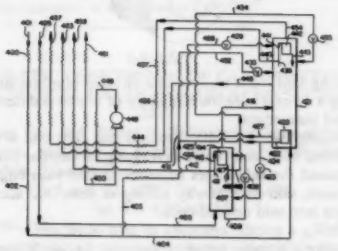
SPLIT COLUMN MULTIPLE CONDENSER-REBOILER AIR SEPARATION PROCESS

Harry Cheung, Buffalo, N.Y., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Dec. 2, 1982, Ser. No. 446,400

Int. Cl.³ F25J *3/04*

U.S. Cl. 62—31 **22 Claims**



1. A process for the production of nitrogen gas at greater than atmospheric pressure by the separation of air by rectification comprising:

(A) introducing cleaned, cooled feed air at greater than atmospheric pressure into a high pressure column operating at a pressure of from about 80 to 300 psia;

(B) separating said feed air by rectification in said high pressure column into a first nitrogen-rich vapor fraction and a first oxygen-enriched liquid fraction;

(C) recovering from about 0 to 60 percent of said first nitrogen-rich vapor fraction as high pressure nitrogen gas at a purity exceeding about 99 percent;

(D) condensing at least a portion of said first nitrogen-rich vapor fraction by indirect heat exchange with said first oxygen-enriched liquid fraction thereby producing a first nitrogen-rich liquid portion and a first oxygen-enriched vapor fraction;

(E) employing at least some of said first nitrogen-rich liquid portion as liquid reflux for said high pressure column;

(F) introducing said first oxygen-enriched vapor fraction into a medium pressure column operating at a pressure, lower than that of said high pressure column, of from about 40 to 150 psia;

(G) separating said first oxygen-enriched vapor fraction by rectification in said medium pressure column into a second nitrogen-rich vapor fraction and at least some oxygen in the form of a second oxygen-enriched liquid fraction;

(H) vaporizing a portion of said second oxygen-enriched liquid fraction by indirect heat exchange with cleaned, cooled feed air at a pressure of from about 80 to 350 psia, thereby producing a first oxygen-enriched vapor portion, for use as vapor reflux in said medium pressure column, and liquid air;

(I) dividing said liquid air into a first part which is introduced into said high pressure column wherein it is separated by rectification into parts which comprise the first nitrogen-rich vapor fraction and the first oxygen-enriched liquid fraction, and into a second part, which is introduced into said medium pressure column wherein it is separated by rectification into parts which comprise the second nitrogen-rich vapor fraction and the second oxygen-enriched liquid fraction;

(J) recovering up to 60 percent of said second nitrogen-rich vapor fraction as medium pressure nitrogen gas at a purity exceeding about 99 percent;

(K) condensing at least a portion of said second nitrogen-rich vapor fraction by indirect heat exchange with a portion of said second oxygen-enriched liquid fraction thereby producing a second oxygen-enriched vapor portion and a second nitrogen-rich liquid portion;

(L) employing said second nitrogen-rich liquid portion as liquid reflux for said medium pressure column;

(M) employing said first nitrogen-rich liquid portion as additional liquid reflux for said medium pressure column in an amount equivalent to that of from about 0 to 60 percent of said first nitrogen-rich vapor fraction such that the sum of said amount and of the high pressure nitrogen gas recovered in step (C) is from about 0 to 60 percent of said first nitrogen-rich vapor fraction; and

(N) removing from the process said second oxygen-enriched vapor portion having an oxygen purity of from 57 to 97 percent.

4,448,596

METHOD OF OPERATING A BIMODAL HEAT PUMP, AS WELL AS BIMODAL HEAT PUMP FOR USING SAID METHOD

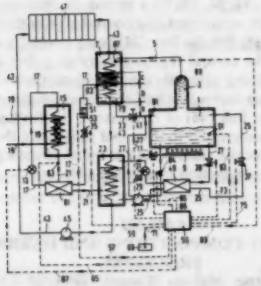
Willem L. N. van der Sluys, and Mathias L. Hermans, both of Eindhoven, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 7, 1983, Ser. No. 456,235

Claims priority, application Netherlands, Oct. 28, 1981, 8204161

Int. Cl.³ F25B *15/00*

U.S. Cl. 62—101 **2 Claims**



1. A method of operating a bimodal heat pump which in a first mode operates as an absorption heat pump and in a second mode operates as an evaporation-condensation device, in which first mode at least a part of a dissolved working medium is separated in a generator from a solvent by heating and is then transported in the gaseous state to a condensor in which the working medium is liquefied by giving off thermal energy to a heat-transporting medium, after which the liquid working medium is expanded and evaporated in an evaporator by taking up thermal energy from the environment and is further transported to an absorber in which the working medium is bonded to the solvent while giving off thermal energy to a heat-transporting medium, while another part of the still bonded working medium in the generator is pumped to the absorber together with the relevant part of the solvent and a part of the working medium and the solvent is returned from the absorber to the generator, in which second mode the connections between evaporator and condensor and absorber and generator, respectively, are closed and a connection between the working medium in the condensor and the generator is opened, characterized in that upon switching over from the first to the second mode an extra quantity of working medium is provided in the cycle formed by the generator (1) and condensor (7) and the concentration of the working medium in the generator (1) compared with the concentration of the working medium in the first mode is increased, which extra quantity of working medium is stored again in the condensor (7) which switching from the second mode to the first mode.

4,448,597

AIR CONDITIONING APPARATUS

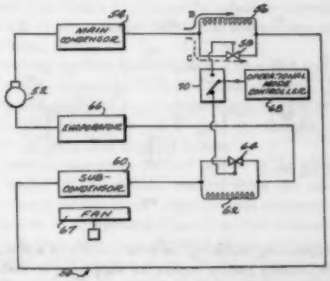
Eiji Kuwabara, Fujishi; Takayoshi Sakata, Jufishi; Noboru Kawauchi, Shizuokashi; Yuuichi Ide, and Takeshi Matsuo, both of Fujishi, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Division of Ser. No. 195,065, Oct. 7, 1980, Pat. No. 4,350,023. This application Jul. 1, 1982, Ser. No. 394,302

Claims priority, application Japan, Oct. 15, 1979, 54-132673

Int. Cl.³ F25D *17/04*

U.S. Cl. 62—176.6 **2 Claims**



1. An air-conditioning apparatus comprising:

a compressor for compressing the refrigerant;

a first condensor connected to said compressor for condensing refrigerant;

a first expanding means connected to said first condensor for expanding the refrigerant therein;

a first valve means connected in parallel with said expanding means for allowing refrigerant to flow therethrough;

a second condensor connected to said expanding means for further condensing the refrigerant when said first valve means is opened and for evaporating the refrigerant when said first valve means is closed;

a second valve means connected to said second condensor for allowing the refrigerant therethrough;

a second expanding means connected in parallel with said second valve means for expanding the refrigerant when said first valve means is opened while said second valve is closed;

an evaporator connected to said second expanding means for evaporating the refrigerant;

means for sensing temperature to produce a temperature signal substantially corresponding to the temperature;

means for sensing humidity to produce a humidity signal substantially corresponding to humidity; and

means responsive to said humidity and temperature signals for controlling opening and closing of said first and second valve means so that said first valve means is opened and said second valve means is closed when temperature

and humidity exceed a given temperature and a given humidity, respectively, and a value substantially corresponding to a sum of said temperature and said humidity exceeds a given value substantially corresponding to a given sum of said given temperature and said given humidity and said first valve means is closed and said second valve means is opened when said humidity exceeds said given humidity while said temperature is below said given temperature.

4,448,598

PNEUMATIC SYSTEM FOR OPERATING THE MECHANISM OF ICE SEPARATION FROM EVAPORATING PLATES IN A PLATE OR SLAB ICE GENERATOR BY USING THE CONDENSING GAS, SIMULTANEOUSLY WITH CIRCUIT REVERSAL FOR DEFROSTING THE ICE PRODUCT

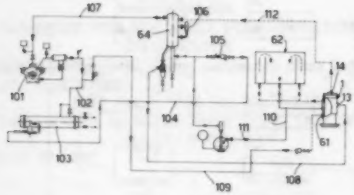
Gaspare LaMonica, Brugherio, Italy; Federico Richelli, deceased, late of Milan, Italy; by Angelo Richelli, heir, Segrate, Italy; by Giorgio Richelli, heir; by Fabrizia Richelli, heir, both of Milan, Italy; by Mauro Richelli, heir, Napoli, Italy, and by Matilde Orini, heir, Milan, Italy, assignors to Samifi Babcock Samifi Internationale S.A., Paris, France

Filed Feb. 25, 1982, Ser. No. 352,235

Claims priority, application France, Feb. 27, 1981, 81 04036

Int. Cl.³ F25C *5/10*

U.S. Cl. 62—352 **19 Claims**



1. In an icemaking machine, the combination of a plurality of hollow evaporating plates, means for supplying to said plates liquid refrigerant for evaporation in said plates to cool said plates and thereby freeze water supplied to said plates to form slabs of ice thereon, pneumatically operable mechanical means engagable with ice slabs on said plates to exert thereon forces directed to remove said slabs from said plates and means for supplying hot gaseous refrigerant under pressure to said plates to heat said plates to release ice slabs therefrom and to said pneumatically operable mechanical means to activate said mechanical means to remove released ice slabs from said plates.

4,448,599

HOLLOW SPHERES PRODUCED FROM NATURAL ZEOLITES

John D. Mackenzie, and Tetsuro Horiuchi, both of Los Angeles, Calif., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Mar. 22, 1982, Ser. No. 360,705

Int. Cl.³ C03B *19/10*; C03C *3/04*

U.S. Cl. 65—21.4 **8 Claims**

1. A process for the formation of hollow glassy generally spherical particles which comprises rapidly heating natural mineral zeolite particles to a temperature above the liquidus temperature of the particles for a time sufficient to melt the surfaces of the particles and cause the combined water present in the particles to be rapidly vaporized, whereby the particles expand and form said hollow glassy particles, and the hollow glassy particles are thereafter quenched in an ambient atmosphere at a temperature below said liquidus temperature.

4,448,600

MOULD OPENING AND CLOSING MECHANISM

David Braithwaite, Doncaster, and Stanley P. Jones, Tickhill, both of England, assignors to Emhart Industries, Inc., Farmington, Conn.

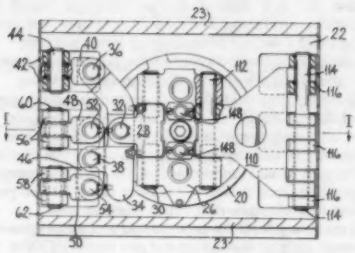
PCT No. PCT/GB82/00049, 371 Date Sep. 30, 1982, 102(e) Date Sep. 30, 1982, PCT Pub. No. WO82/02877, PCT Pub. Date Sep. 2, 1982

PCT Filed Feb. 22, 1982, Ser. No. 433,140

Claims priority, application United Kingdom, Feb. 27, 1981, 8106259

Int. Cl.³ C03B *11/06*

U.S. Cl. 65—360 **4 Claims**



1. A mould opening and closing mechanism for use in opening and closing three moulds simultaneously by moving a portion of each mould relative to further portions of that mould, the mechanism comprising three mould portion supports (**66, 68, 70**) each arranged to support a portion of a mould (**12**), three levers (**42, 56, 58**) each of which is pivotal on a fixed pivot (**64**) and each of which is pivotally connected to one of the mould portion supports (**66, 68, 70**), and moving means (**18, 20**) connected to the levers (**42, 56, 58**) and operable to cause the levers (**42, 56, 58**) to pivot about the fixed pivots (**64**) so that the mould portion supports (**66, 68 70**) are moved and the mould portions (**12**) are moved away from or towards further mould portions (**14**) thereby opening or closing the moulds, characterised in that the moving means (**18, 20**) is connected to the three levers (**42, 56, 58**) by a system of links comprising a link (**34**) pivotally connected at a central region thereof to the moving means (**18, 20**), the link (**34**) being pivotally connected on one side of the central region thereof to a first (**42**) of the levers and also being pivotally connected on the other side of the central region thereof at half the effective distance therefrom to a further link (**46**) of the system, the further link (**46**) being pivotally connected to a second (**56**) and a third (**58**) of the levers on opposite sides of and at equal effective distances from its pivotal connection to the link (**34**).

4,448,601

HERBICIDAL COMPOSITIONS AND HERBICIDAL PROCESSES

Tetsuo Takematsu; Makoto Konnai, both of Utsunomiya; Kunitaka Tachibana, Yokohama; Takashi Tsuruoka, Kawasaki; Shigeharu Inouye, and Tetsuro Watanabe, both of Yokohama, all of Japan, assignors to Meiji Seika Kaisha, Ltd., Chuo, Japan

Continuation of Ser. No. 959,838, Nov. 13, 1978. This application Dec. 23, 1981, Ser. No. 334,042

Claims priority, application Japan, Mar. 9, 1978, 53-25971

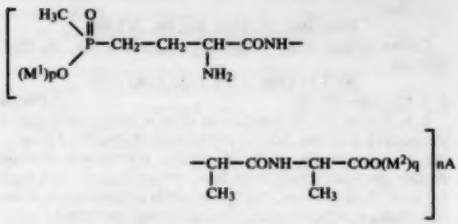
The portion of the term of this patent subsequent to Jan. 5, 1999, has been disclaimed.

Int. Cl.³ A01N *71/86*

U.S. Cl. 71—86 **3 Claims**

1. A process for severely damaging or killing unwanted herbaceous and woody plants, which comprises applying to plants susceptible thereto a herbicidally effective amount of SF-1293 substance or an alkali metal, alkaline earth metal,

copper, zinc, nickel, manganese, ammonium, substituted ammonium or acid-addition salt thereof, said SF-1293 substance or salt thereof being of the formula:



wherein M^1 and M^2 are each hydrogen or a cation selected from the group consisting of sodium, potassium, lithium, copper, magnesium, calcium, zinc, nickel, maganese and ammonium which is unsubstituted or substituted by 1–4 lower alkyl, hydroxy lower alkyl, or lower alkenyl; A is an inorganic or organic acid selected from the group consisting of hydrochloric, sulfuric, hydrobromic, phosphoric, perchloric, nitric, acetic, propionic, citric, tartaric, monochloroacetic, trichloroacetic and trifluoroacetic acids; n is 0, 0.5 or 1; p is the inverse number of the valency of M^1; and q is the inverse number of the valency of M^2.

4,448,602

HERBICIDAL COMPOSITIONS

Hans Schumacher, Flörsheim am Main; Konrad Albrecht, and Rudolf Heinrich, both of Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

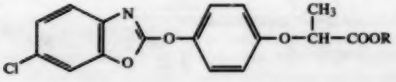
Filed Sep. 15, 1982, Ser. No. 418,396

Claims priority, application Fed. Rep. of Germany, Sep. 17, 1981, 3136913

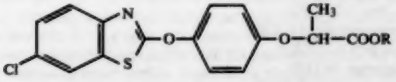
Int. Cl.³ A01N *43/02, 43/00*

U.S. Cl. 71—90 **6 Claims**

1. A herbicidal composition consisting essentially of an effective amount of the mixture of a compound of the formula I



in which R is (C_1–C_4)-alkyl, in combination with a compound of the formula II



in which R is as defined above, the mixing ratio of compounds of the formulae I and II being from 1:1 to 1:5.

4,448,603

HERBICIDAL COMPOSITION

Haruhiko Nakayama, Kashiwa, and Takashi Tatsuno, Tokyo, both of Japan, assignors to Rikagaku Kenkyusho, Wako, Japan

Filed Aug. 13, 1981, Ser. No. 292,642

Claims priority, application Japan, Aug. 21, 1980, 55-115286; Aug. 21, 1980, 55-115287; Jul. 27, 1981, 56-117267

Int. Cl.³ A01N *43/64*

U.S. Cl. 71—92 **3 Claims**

1. A method of killing weeds which consists of applying to the weeds a herbicidally effective amount of 3-[3-(4H-1,2,4-triazolyl)amino]-1-(3H)-isobenzofuranone.

4,448,604

RECOVERY OF PRECIOUS METALS FROM LEACH RESIDUES

Joseph G. Day, Holmer Green, and Jeffrey R. Taylor, Reading, both of England, assignors to Matthey Rustenburg Refiners (Pty) Limited, Johannesburg, South Africa

Filed Sep. 12, 1982, Ser. No. 417,616

Claims priority, application United Kingdom, Sep. 16, 1981, 8127977

Int. Cl.³ C22B *11/00*

U.S. Cl. 75—63 **13 Claims**

1. A process for the recovery of platinum group metals, silver and gold from a Fe, Cu and Ni sulphide-containing leach residue which also contains Se and Te, said process comprising the following steps:

(a) smelting the said leach residue with a flux to produce:

(i) a slag containing FeO, CaO and SiO_2 and

(ii) a copper matte phase containing S, the platinum group metals, Au, Ag, Se and Te, and an excess of Ni and/or Fe as defined in step (b) below,

(b) removing excess, as defined below, of the elements iron or nickel or compounds thereof from the matte phase produced by step (a) by oxidation thus converting the said elements or compounds thereof to their respective oxides which then report to the slag phase, said excess being defined as more than about 5% by weight of iron, more than about 8% by weight of nickel or more than 12% by weight of the total of iron and nickel, based on the weight of the matte phase,

(c) contacting the matte phase produced after oxidation step (b) in liquid form with one or more molten metals selected from the group consisting of Cu, Ni and Fe so as to produce a separate immiscible metallic phase containing platinum group metals, silver and gold, and

(d) recovering silver from the matte phase and the platinum group metals, gold and the proportion of silver which remains from the metallic phase.

4,448,605

DUCTILE BRAZING ALLOYS CONTAINING REACTIVE METALS

Howard Mizuhara, Hillsborough, Calif., assignor to GTE Products Corporation, Stamford, Conn.

Filed Dec. 2, 1982, Ser. No. 446,285

Int. Cl.³ C22C *30/00*

U.S. Cl. 75—123 H **7 Claims**

1. An article consisting essentially of a ductile brazing foil having a thickness of from about 2 to about 6 mils, said foil being a binary alloy of a reactive metal and a second metal, said reactive metal constituting from about 0.1 to 4% of said alloy and selected from the group consisting of titanium, zirconium, vanadium and mixtures thereof and the balance of said alloy being the second metal which is only one metal selected from the group consisting of silver, iron, nickel, and aluminum.

4,448,606

MOLYBDENUM-TUNGSTEN BASED ALLOYS CONTAINING HAFNIUM CARBIDE

Russell H. Rhodes, Monroeton; James S. Smith, Towanda, both of Pa., and Leslie P. Clare, Colonia Del Valle, Mexico, assignors to GTE Products Corporation, Stamford, Conn.

Filed Dec. 15, 1982, Ser. No. 449,918

Int. Cl.³ B22F *3/00*

U.S. Cl. 75—236 4 Claims

1. A powder metallurgy alloy consisting essentially of a solid solution of molybdenum and from about 10 to about 98 percent by weight tungsten, said alloy having a dispersed phase of precipitated hafnium carbide wherein hafnium and carbon are present in an amount from about 0.25 to about 3 percent by weight and in a ratio of about 12 to about 15 parts of hafnium per part of carbon.

4. A process for producing a molybdenum-tungsten based alloy comprising preparing a mixture consisting essentially of the oxides of molybdenum and tungsten, said mixture comprising from about 10 to 98 percent by weight tungsten based on the combined weight of tungsten and molybdenum, coreducing said oxide mixture in a hydrogen atmosphere to give an intimate mixture of molybdenum and tungsten powder, adding and blending hafnium carbide with said mixture in an amount sufficient for hafnium carbide to be from about 0.25 to about 3 percent by weight of a resulting mixture, pressing and sintering said resulting mixture at a temperature of from 1800 to about 2300 degrees Celsius for a sufficient period of time to dissolve at least a portion of said hafnium carbide, working said sintered alloy at a temperature below the recrystallization temperature of the resulting alloy to precipitate a dispersed phase of hafnium carbide.

4,448,607

CONDITIONING CRUDE PHTHALOCYANINE PIGMENTS

Steven L. Johnson, Fairfield; George McLaren, Mason, and George H. Robertson, Montgomery, all of Ohio, assignors to Sun Chemical Corporation, New York, N.Y.

Filed Sep. 20, 1982, Ser. No. 420,083

Int. Cl.³ C09D *11/00*; C08L *1/08*; C09B *47/04*

U.S. Cl. 106—19 8 Claims

1. A process for conditioning crude phthalocyanine pigment which consists of grinding the crude pigment with a phthalimidomethyl phthalocyanine derivative or a sulfonated phthalimidomethyl phthalocyanine derivative in the absence of any grinding aid.

4,448,608

COLORED INORGANIC COMPLEX FOR USE AS A PIGMENT AND COMPOSITIONS CONTAINING IT

John W. Jenkins, and John Wolstenholme, both of Reading, England, assignors to Johnson Matthey Public Limited Company, London, England

Filed Feb. 24, 1983, Ser. No. 469,446

Claims priority, application United Kingdom, Dec. 30, 1982, 8236866

Int. Cl.³ C09C *1/36*

U.S. Cl. 106—292 14 Claims

1. An inorganic complex of stannous oxide with titanium and zinc oxides the complex having a colour describable in terms of at least one of the four basic colours which are red, yellow, green and blue.

4,448,609

PROCESS FOR THE PRODUCTION OF AQUEOUS DISPERSIONS OF PIGMENTARY TITONIUM DIOXIDE

Brian Tear, Cleethorpes, and David G. Othen, Grimsby, both of England, assignors to Laporte Industries Limited, London, England

Filed Mar. 25, 1982, Ser. No. 361,888

Claims priority, application United Kingdom, Apr. 10, 1981, 8111319

Int. Cl.³ C09C *1/36, 3/02*; C08J *3/00*

U.S. Cl. 106—308 N 8 Claims

1. A process for the production of an aqueous dispersion of pigmentary titanium dioxide particles characterised by forming an aqueous dispersion of washed pigmentary titanium dioxide particles which have been surface treated with from 1.0 to 4.0% of alumina, raising the solids concentration of the said alumina surface-treated titanium dioxide particles to above 60% by weight, introducing into the dispersion, before or after the solids concentration thereof has been raised, a combination of dispersants comprising an amine dispersant in from 0.3% to 3.0% by weight of the alumina surface treated titanium dioxide, and an anionic dispersant in from 0.04% to 0.75% by weight of the alumina surface treated titanium dioxide and milling the raised solids concentration dispersion, containing the said combination of dispersants, in the presence of grinding elements to raise the gloss value given by the dispersion to at least 50 and the Brookfield viscosity value using spindle No. 3 and 60 r.p.m. given by the dispersion to from 400 to 3000.

8. An aqueous dispersion of pigmentary titanium dioxide particles surface treated with from 1.0% to 4.0% of alumina, the dispersion having a concentration of said alumina surface-treated titanium dioxide particles of above 60% by weight and containing a combination of dispersants comprising an amine dispersant in at least 0.3% and not more than 2% and an anionic dispersant in at least 0.04% less than 0.6% by weight of the alumina surface-treated metal oxide particles less than 20% of the said alumina surface-treated metal oxide particles having a particle size greater than 0.5 microns in diameter, the dispersion giving a % gloss value of at least 50 and a Brookfield viscosity value, using spindle No. 3 and 60 r.p.m., of from 400 to 3000.

4,448,610

CENTRIFUGALLY CAST TUBE OF SPHEROIDAL GRAPHITE CAST-IRON AND ITS METHOD OF MANUFACTURE

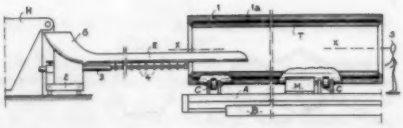
Rio Bellocci, Pont A Mousson, France, assignor to Pont-A-Mousson S.A., Nancy, France

Filed Feb. 24, 1983, Ser. No. 469,601

Claims priority, application France, Mar. 1, 1982, 82 03327

Int. Cl.³ C21D *5/06, 9/08*

U.S. Cl. 148—3 6 Claims



1. Centrifugally cast tube of spheroidal graphite cast-iron, characterised in that the cast-iron has the following composition by weight:

carbon: 2.5–4.0%
silicon: 2–4.0%
manganese: 0.1–0.6%
nickel: 0–3.5%
copper: 0–11%
magnesium: 0–0.5%
sulphur: 0.01% maximum
phosphorus: 0.06% maximum

the remainder being iron, this cast iron having a bainitic structure.

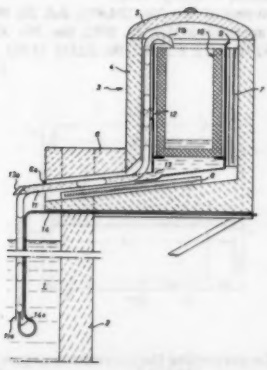
4. Method for the manufacture of a centrifugally cast tube of spheroidal graphite cast-iron, the cast-iron having a bainitic structure and a composition by weight of carbon: 2.5–4.0%, silicon: 2–4.0%, manganese: 0.1–0.6%, nickel: 0–3.5%, copper: 0–11%, magnesium: 0–0.5%, sulphur: 0.01% maximum, and phosphorus: 0.06% maximum, the remainder being iron, characterised in that one starts with a spheroidal graphite cast-iron having said composition, this cast-iron is poured into a centrifugal chill-mould provided with a refractory coating and cooled externally by water, the centrifugally cast tube is left to cool in the chill-mould to a temperature of the order of 800°–1000° C. in order to acquire an austenitic structure, then, still in the chill-mould, it is cooled vigorously and uniformly over its entire length by spraying water or a mixture of air and water onto its inner wall, to a temperature of approximately 250°–400° C., in order to give it an austenitic or bainitic structure, then the tube is removed from its chill-mould and placed inside a furnace kept at a temperature of between 250° and 450° C. in order to create or maintain a bainitic structure and the tube is removed from the furnace in order to allow it to cool in the air.

4,448,611

PROCESS FOR IMPROVING THE CORROSION RESISTANCE OF FERROUS METAL PARTS

Bernard Grellet, Saint-Etienne; Jean-Pierre Emmanuel, Cellieu, and Bernard Sipp, Andrezieux-Boutheon, all of France, assignors to Centre Stephanois de Recherches Mecaniques Hydromecanique et Frottement, Andrezieux-Boutheon, France

Filed Apr. 25, 1983, Ser. No. 488,612
Claims priority, application France, Apr. 23, 1982, 82 07008
Int. Cl.³ C23F 7/04
U.S. Cl. 148—6.11 **20 Claims**



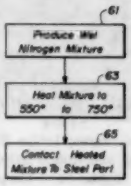
1. A process for improving the corrosion resistance of ferrous metal parts containing free or combined sulphur in their surface layers, in which the parts are immersed in an oxidising bath of molten salts comprising alkali metal hydroxides, alkali metal nitrates and/or nitrites and, if appropriate, alkali metal carbonates, comprising adding to the oxidising bath from 0.5% to 15% by weight of oxygen-containing salts of alkali metals, the normal oxidation-reduction potential of which is less than or equal to −1.0 volt relative to the hydrogen reference electrode; blowing a gas containing oxygen into the bath at a sufficient rate for the bath to be saturated with dissolved oxygen; immersing the parts in the bath for a sufficient time for the composition of their surface layer to be stabilised; and maintaining below 3% by weight the proportion of insoluble particles in the bath thereby eliminating sulphur contaminants from the said surface layers.

4,448,612

METHOD OF BLACKENING SURFACES OF STEEL PARTS WITH WET NITROGEN

Chris W. Ebert, Lancaster, and Earle S. Thall, Leola, both of Pa., assignors to RCA Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 351,281, Feb. 22, 1982, abandoned. This application May 3, 1983, Ser. No. 491,251
Claims priority, application France, Feb. 14, 1983, 83 02292
Int. Cl.³ C23C 11/10
U.S. Cl. 148—6.35 **13 Claims**



1. A method of blackening surfaces of steel parts comprising
(a) producing a gaseous mixture consisting essentially of nitrogen and water vapor, said mixture having a dew point of about −8° to +32° C.,
(b) heating said gaseous mixture to about 600° to 750° C., and
(c) contacting said heated mixture with said steel parts for about 5 to 15 minutes.

4,448,613

DIVORCED EUTECTOID TRANSFORMATION PROCESS AND PRODUCT OF ULTRAHIGH CARBON STEELS

Oleg D. Sherby; Toshimasa Oyama, both of Palo Alto, and Jeffrey Wadsworth, Menlo Park, all of Calif., assignors to Board of Trustees, Leland Stanford, Jr. University, Stanford, Calif.

Filed May 24, 1982, Ser. No. 381,194
Int. Cl.³ C21D 8/00
U.S. Cl. 148—12 R **9 Claims**

1. A method for processing ultrahigh carbon steel employing a divorced eutectoid transformation comprising the steps of:
(a) heating an ultrahigh carbon steel with a carbon content from about 1.0% to 2.1% to a temperature in excess of the A_{cm} transformation temperature, to form an austenite matrix in which substantially all of the carbon is dissolved;
(b) cooling the steel treated in step (a) from the A_{cm} temperture to about the A_1 transformation temperature, and deforming the steel during at least part of the cooling step;
(c) cooling the steel treated in step (b) to below the A_1 transformation temperature to form pearlite and ferrite;
(d) reheating the steel treated in step (c) to a soaking temperature approximately 50° C. above the A_1 temperature;
(e) soaking the steel at a temperature above A_1 treated in step (d) in the soaking temperature range for a sufficient time such that the major portion of the pearlite is dissolved into the austenite matrix in which the carbon is not uniformly distributed; and
(f) cooling at a rate equivalent to air cooling a second time to below the A_1 transformation temperature.

4. A method for processing ultrahigh carbon steel comprising the steps of:
(a) heating an ultrahigh carbon steel with a carbon content from about 1.0% to 2.1%, containing substantially spheroidized pro-eutectoid carbides in a matrix of ferrite and cementite, to a soaking temperature approximately 50° C. above the A_1 temperature;
(b) maintaining the steel treated in step (a) at a soaking temperature for a time sufficient such that the eutectoid carbides are dissolved into the austenite in which the carbon is not uniformly distributed; and

(c) cooling at a rate equivalent to air cooling the steel of step (b) to below the A_1 transformation temperature.

7. A method for processing ultrahigh carbon steel comprising the steps of:

(a) heating an ultrahigh carbon steel with a carbon content from about 1.0% to 2.1%, containing substantially spheroidized pro-eutectoid carbides in a matrix of martensite, to approximately 50° C. above the A_1 temperature

(b) maintaining the steel treated in step (a) at a soaking temperature for a time sufficient such that the eutectoid carbides are dissolved into the austenite in which the carbon is not uniformly destributed; and

(c) cooling at a rate equivalent to air cooling the steel of step (b) to below the A_1 transformation temperature.

4,448,614

PROCESS FOR COOLING A COLD ROLLED STEEL STRIP

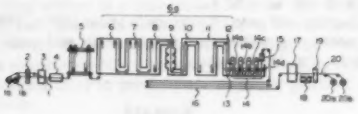
Masao Morimoto, Yokohama; Ichiro Shimbashi, Kitakyushu; Hiroshi Iida, Himeji, and Koichi Sakurai, Kitakyushu, all of Japan, assignors to Nippon Steel Corporation, Japan

Filed Apr. 1, 1981, Ser. No. 249,904

Claims priority, application Japan, Oct. 9, 1980, 55-141311

Int. Cl.³ C21D *9/52*

U.S. Cl. 148—12.1 **5 Claims**



1. A process for continuously cooling a cold-rolled steel strip which has been annealed in an inert gas atmosphere at an elevated temperature, which process comprises the steps of:

(a) moving a cold-rolled steel strip vertically downward along at least one cooling path,

(b) bringing a plurality of streams, each stream consisting of a cooling gas and a cooling liquid comprising water, respectively, into contact with each surface of said steel strip in order to cool said steel strip to a predetermined temperature at a predetermined cooling rate, each stream being jetted independently from each other, and in which process,

(i) said cooling gas consisting of a cooled inert gas extracted from said annealing process,

(ii) said cooling gas and cooling liquid streams being jetted in directions intersecting each other before the jetted cooling gas and liquid streams reach the surface of said steel strip, thus providing a plurality of cooling gas-liquid mixture streams,

(iii) said cooling gas and said cooling liquid being mixed with each other in a volume ratio which is in the range of from 100:1 to 5,000:1 under atmospheric pressure,

(c) removing the cooling liquid remaining on said steel strip surface from said surface when the temperature of said steel strip has reached the desired final temperature, and

(d) moving said cooled strip into a vertically upward drying path to dry said steel strip.

4,448,615

METHOD OF SPOT ANNEALING TUBING

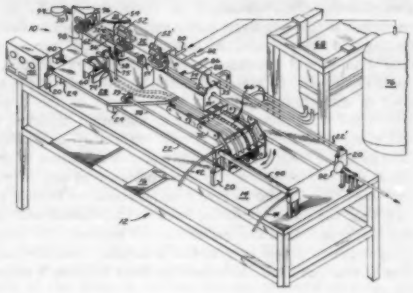
James L. Cunningham, and John M. Tatum, both of Decatur, Ala., assignors to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 375,781, May 6, 1982, abandoned. This application Dec. 15, 1982, Ser. No. 449,967

Int. Cl.³ C21D *1/18*

U.S. Cl. 148—13 **4 Claims**

1. A method for selectively annealing spaced portions of a length of continuously moving tubing which is guided for movement in one direction of its axis comprising the steps of mounting an annealing chamber having tube receiving apparatus in its ends on a carriage for reciprocable movement relative to its mounting base in the direction of the tube axis so that one of said spaced portions of the length of tubing is within the chamber; fixedly clamping said spaced portion of the tubing relative to the annealing chamber at the upstream end thereof



so that said carriage and annealing chamber will move with said continuously moving tubing in a downstream direction; heating said portion of the tubing to an annealing temperature while it is clamped; unclamping said tubing; and returning said carriage and annealing chamber to its original upstream position relative to its mounting base while said tubing continues to move in said one direction of its axis.

4,448,616

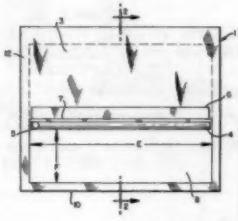
PROCESS FOR REDUCING BACKMIXING

Arthur W. Francis, Jr., New City; Mark S. Nowotarski, Ossining, and Jack Solomon, Rye, all of N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 284,681, Jul. 20, 1981, abandoned. This application May 26, 1982, Ser. No. 382,201

Int. Cl.³ F27B *3/22*; F27D *7/00*; F23M *11/02*

U.S. Cl. 148—16 **2 Claims**



1. In a process for preventing the backmixing of gases into a metal heat treating furnace having two ends, one or both of said ends having openings; each of said openings being defined by its dimensions of width and height and having a gas jet positioned in said opening in such a manner that at least part of the gases is prevented from backmixing into the furnace,

the improvement comprising preventing substantially all of said gases from backmixing into the furnace by carrying out the following steps:

(a) constructing the gas jet by providing a row of uniformly distributed holes in the wall of a straight tube, said row of holes being about parallel to the hypothetical axis running through the center of the tube from one end of the tube to the other end, the ratio of the distance between any two adjacent holes to the height of the opening being no greater than about 1:6;

(b) positioning the gas jet at about the top, and across the width of each opening, the holes being pointed into the

furnace in such a direction that a hypothetical line drawn through the center of each hole from, and perpendicular to, the axis of the gas jet would be at an angle in the range of about 0 degree to about 110 degrees as measured from a hypothetical line corresponding to the height dimension of the opening; and

(c) inserting a plate above the gas jet at about the top, and across the width, of at least one opening at about a ninety degree angle to the hypothetical line corresponding to the height dimension of the opening, said plate extending into the furnace a distance at least about equal to the height of the opening; and

(d) introducing a gas through each gas jet at a flow rate through said gas jet, which is (i) about equal to or greater than the value determined by the following formula when the furnace has one opening and (ii) about equal to the value determined by the following formula when the furnace has two openings:

$$\sqrt{\frac{(A-B)(g)(D)(E)(F)^2(G)}{C}} \times \frac{H}{1.0} \times \frac{300}{J}$$

wherein:

A=density of ambient air

B=density of furnace gases at the opening for said gas jet

C=density of jet gas

g=acceleration of gravity

D=total area of holes in said gas jet

E=width of said opening

F=height of said opening

G=about 1 to about 5

H=the pressure in number of atmospheres inside the gas jet

J=the temperature in degrees Kelvin inside the gas jet.

4,448,617

STEEL FOR A VEHICLE SUSPENSION SPRING HAVING GOOD SAG-RESISTANCE

Toshiro Yamamoto, Tokai; Ryohei Kobayashi, Chita; Mamoru Kurimoto, Tokonabe, and Toshio Ozone, Nagoya, all of Japan, assignors to Aichi Steel Works, Ltd. and Chuo Hatsujo Kabushiki Kaisha, both of Aichi, Japan

Filed Aug. 4, 1981, Ser. No. 289,852

Claims priority, application Japan, Aug. 5, 1980, 55-108020; May 16, 1981, 56-74639

Int. Cl.³ C22C *38/12, 38/26*

U.S. Cl. 148—36 **12 Claims**

1. A steel for a vehicle suspension spring having a good sag-resistance consisting essentially of by weight 0.50–0.80% carbon, 1.50–2.50% silicon, 0.50–1.50% manganese and 0.05–0.50% niobium, the remainder being iron together with impurities.

4,448,618

NICKEL BASED BRAZING FILLER METALS

Debasis Bose, Randolph; Amitava Datta, Morris Township, Morris County, and Nicholas J. DeCristofaro, Chatham, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Feb. 28, 1983, Ser. No. 470,403

Int. Cl.³ C27C *19/00*

U.S. Cl. 148—403 **9 Claims**

Photomicrograph of AISI 316 stainless steel joint brazed with Sample No. 1 alloy of the present invention (Magnification 400 X).

1. A metal alloy having a composition consisting essentially of 25 to 35 atom percent palladium and 15 to 20 atom percent silicon, the balance being nickel and incidental impurities.

4,448,619

EMULSION EXPLOSIVE COMPOSITION

Kenneth A. W. Mitchell, Cheltenham, Australia, assignor to ICI Australia Limited, Melbourne, Australia

Filed May 25, 1983, Ser. No. 498,173

Claims priority, application Australia, Jun. 11, 1982, PF4411

Int. Cl.³ C06B *45/02*

U.S. Cl. 149—21 **23 Claims**

1. A water-in-oil emulsion explosive composition which comprises a discontinuous aqueous phase comprising at least one oxygen-releasing salt, a continuous water-immiscible organic phase comprising sump oil, and an emulsifying agent.

4,448,620

METHOD AND APPARATUS FOR THE INJECTION MOLDING AND VULCANIZATION OF VEHICLE TIRES

Lothar Fink, Achim-Baden, Fed. Rep. of Germany, assignor to Klockner-Werke AG, Duisburg, Fed. Rep. of Germany

Division of Ser. No. 244,400, Mar. 16, 1981. This application Mar. 8, 1982, Ser. No. 355,787

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1980, 3011199

Int. Cl.³ B29H *17/00, 5/02*

U.S. Cl. 156—125 **8 Claims**

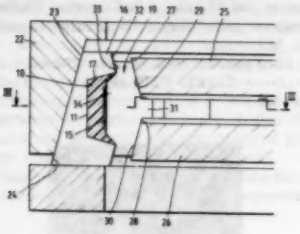
1. A method for producing vehicle tires, comprising the steps of:

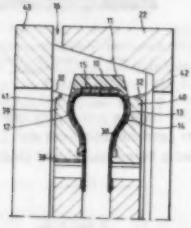
(a) injection molding and prevulcanizing a crown portion (10) having treads (11) in a closed annular mold cavity (17) an outer part of which is defined by an annular outer mold (16) and an inner part of which is defined by an inner removable mold core (19) which comprises a plurality of circumferentially abutting radially movable segments and wherein pressing means are provided for urging said removable mold core and said outer mold radially toward one another to mold said crown portion after a crown portion building material has been injected into said annular mold cavity,

(b) opening the cavity by removing the inner removable mold core and keeping said crown portion against an inner surface of said annular outer mold,

(c) placing a carcass (14) having prevulcanized sidewalls (12, 13) in abutment with an exposed inner surface of said

crown portion retained in said outer part of said cavity, and





(d) completing the vulcanization of the crown portion and sidewalls, and simultaneously joining the sidewalls to the crown portion.

4,448,621

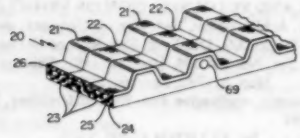
LONG SYNCHRONOUS BELT AND METHOD FOR MAKING THE SAME

Richard L. Marsh, and Robert E. Wetzel, both of Springfield, Mo., assignors to Dayco Corporation, Dayton, Ohio

Filed Apr. 30, 1979, Ser. No. 34,698

Int. Cl.³ B29H *7/22*; F16G *1/00*; B29H *7/04*

U.S. Cl. 156—138 **16 Claims**



1. A process for manufacturing an endless toothed power transmission belt made primarily of elastomeric material which comprises the steps of:

(a) providing a first belt sleeve made primarily of elastomeric material and having a load-carrying band located therein, said first sleeve having a desired circumferential length, tooth pitch and tooth shape by the steps comprised of winding a fabric around the outer circumference of a cylindrical mold having substantially axially extending grooves therein to form tooth cavities beneath said fabric, helically winding at least one strand in a plurality of convolutions around said mold over said fabric to form said load-carrying band, applying a layer of moldable rubber over said band, heating said layer to soften it and applying pressure to said rubber to force said softened rubber through the spaces between successive convolutions of said band and filling said tooth cavities by forcing said fabric into contact with the walls of said grooves and filling the space between said fabric and said band with said rubber; and thereafter at least partially curing said rubber;

(b) cutting said first sleeve in helical fashion into a continuous strip of predetermined width;

(c) providing an alignment means having a plurality of grooves, said grooves having a shape complimentary to said tooth shape and having a spacing corresponding to said tooth pitch;

(d) winding said strip in helical fashion around said alignment means to provide a plurality of adjacent strips and aligning the teeth of adjacent strips with each other and with said grooves in said alignment means to provide a second belt sleeve, said second sleeve having a circumferential length different from the circumferential length of said first sleeve;

(e) joining said adjacent strips in side-by-side relation; and

(f) cutting at least one belt from said second sleeve.

4,448,622

COMPOSITE POLYMERIC FILM AND METHOD FOR ITS USE IN INSTALLING A VERY THIN POLYMERIC FILM IN A DEVICE

David V. Duchane, Los Alamos, and Barry L. Barthell, Tesuque, both of N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 26, 1982, Ser. No. 371,745

Int. Cl.³ B32B *31/00, 27/42*

U.S. Cl. 156—155 **14 Claims**

1. A composite polymeric film for use in installing a very thin polymeric film in a device, comprising a water soluble backing layer selected from the group consisting of polyvinyl alcohol, cellulose ether, sodium carboxymethyl cellulose and polyoxyethylene, and a thin film layer selected from the group consisting of polyvinyl formal, polymeric di-p-xylylene and cellulose acetate, and wherein said backing layer is relatively thicker than said thin film layer.

5. A method of installing a thin polymeric film in a device, comprising the steps of:

forming a composite film consisting essentially of a backing layer and a thin film layer, said backing layer being relative thicker than said thin film layer, said backing layer being soluble in at least one solvent in which said thin film layer is insoluble;

installing said composite film in a device in a position in which it is desired to install said thin film; and

immersing said device together with said composite film in a suitable solvent to dissolve said backing layer and leave said film layer as an unbacked thin polymeric film installed in the device.

4,448,623

WETTED FILAMENT DISPENSER AND WINDING THEREWITH

Keith B. Critchlow, London, England, assignor to The British Petroleum Company Limited, London, England

Filed Apr. 30, 1980, Ser. No. 145,037

Claims priority, application United Kingdom, May 4, 1979, 7915564

Int. Cl.³ B65H *81/00*

U.S. Cl. 156—169 **12 Claims**

1. A wetted filament dispenser comprising:

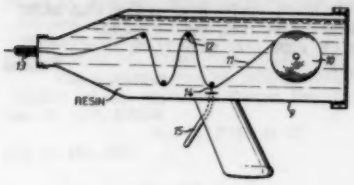
(a) a container of a size suitable for hand holding and having an outlet nozzle;

(b) a source of a bundle of filaments forming a continuous strand;

(c) means for holding a quantity of liquid through which said continuous strand passes;

(d) spreader guide bars inside said container over which said

wetted continuous strand passes prior to passing through said outlet nozzle; and



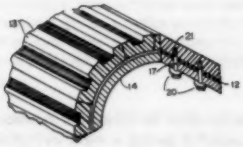
(e) manually-operated means for regulating the tension of said continuous strand as it is dispensed through said outlet nozzle.

4,448,624

METHOD AND APPARATUS FOR MAKING FILAMENT WOUND CYLINDRICAL STRUCTRES

Robert C. Webber, Marietta, Ga., assignor to Lockheed Corporation, Burbank, Calif.

Filed Mar. 11, 1983, Ser. No. 474,441
Int. Cl.³ B65H *81/00*; B41B *11/00*
U.S. Cl. 156—175 **5 Claims**



1. The method of fabricating a resin-impregnated filament wound cylindrical section comprising the steps of:

(a) wrapping a single layer of metallic wire around the cylindrical surfaces of a hollow cylindrical mandrel having a plurality of radial openings therein, the pitch of said wrapping of wire on the mandrel being sufficiently great to permit intermediate spacings between at least some of the adjacent wraps of the wire;

(b) connecting each end of the wire to its respective end of said mandrel;

(c) mounting a plurality of axially extending elongated segments to said hollow cylindrical mandrel by fastening means extending through said radial openings and between a pair of adjacent wraps of said wire and into engagement with said segments whereby said segments are held in contact with said wrapped wire and whose outer surfaces form a winding mandrel surface;

(d) winding a resin-impregnated composite filament on said winding mandrel surface into a wound cylindrical configuration as desired;

(e) curing the cylindrically wound composite filament while still contained on the mandrel surface;

(f) remove the fastener means retaining the elongated segments to said hollow cylindrical mandrel;

(g) disconnect both ends of the wire from the hollow cylindrical mandrel and pull the wire from between the hollow cylindrical mandrel and the elongated segments;

(h) separate the hollow cylindrical mandrel and the elongated segments still containing the filament wound cylindrical section in cured state;

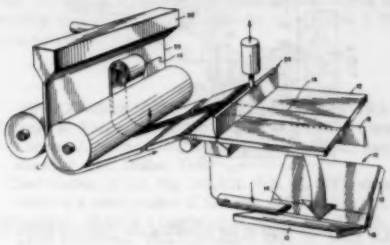
(i) and remove the elongated segments from within the filament wound cylindrical section.

4,448,625

METHOD OF MAKING A COMPOSITE PLASTIC MAT

Armando Carrera, Wood Dale, Ill., assignor to Tenex Corporation, Elk Grove, Ill.

Filed Oct. 2, 1981, Ser. No. 307,651
Int. Cl.³ B32B *31/00*
U.S. Cl. 156—243 **10 Claims**



1. A process for forming a floor mat and the like including an elongated web means of flexible plastic material and a plastic strip means laminated into one side of said web means, said plastic strip means being relatively more flexible than said web means whereby folding of said mat along the length of said strip means is facilitated, said process comprising the following steps:

feeding and advancing a web-like supply of vinyl in molten condition to and through a forming station,

feeding and advancing, simultaneously with said web-like supply of vinyl, a plastic strip means to and through said forming station,

pressuring said web-like supply of molten vinyl and said plastic strip means at said forming station into an elongated composite web wherein said forming station comprises cylindrical formers which calendar the thickness of the resulting said composite web so that said plastic strip means becomes laminated in said web-like supply of molten vinyl with one side of said plastic strip means forming a portion of the resulting side of said composite web, and with the thickness of said composite web being greater than the thickness of said plastic strip means, including the step of slitting the side of said composite web opposite from said plastic strip means along a line generally opposite and parallel to said strip means substantially through to said plastic strip means.

4,448,626

METHOD AND APPARATUS FOR APPLYING A WELT TO A GARMENT PANEL

Joseph W. A. Off, Irving; Judson H. Early, Dallas; Daniel K. Roady, Dallas, and Theodore B. Thayer, Dallas, all of Tex., assignors to Haggar Company, Dallas, Tex.

Continuation-in-part of Ser. No. 170,750, Jul. 21, 1980, Pat. No. 4,371,074. This application Aug. 16, 1982, Ser. No. 408,641
Int. Cl.³ A41D *27/20*; A41H *43/00*; B32B *31/04, 31/10*
U.S. Cl. 156—256 **25 Claims**

1. An apparatus for positioning a garment piece on a garment panel at a work station, comprising:

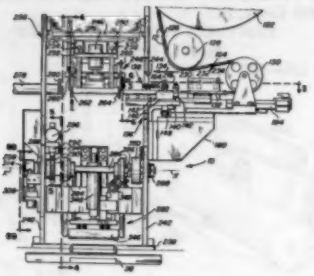
holding clamp means for holding the garment piece in a fixed position;

transfer clamp means for receiving the garment piece from said holding clamp means and for moving the garment piece in a first direction to a preselected position;

trimming means for trimming at least one edge of the piece;

setting clamp means for receiving the garment piece from that transfer clamp means and for transferring the piece to

the work station and positioning the piece on the garment panel; and



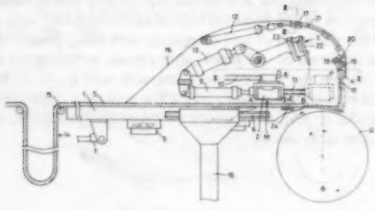
means at the work station for adhering the garment piece to the garment panel.

4,448,627

APPARATUS FOR APPLYING A RUBBER SHEET ONTO A TIRE MAKING DRUM

Kazuo Satoh, Kobe, and Tsutomu Nosaka, Hyogo, both of Japan, assignors to Sumitomo Rubber Industries, Ltd., Kobe, Japan

Filed Aug. 31, 1982, Ser. No. 413,436
Claims priority, application Japan, Sep. 9, 1981, 56-142799
Int. Cl.³ B29H *17/18, 17/02*
U.S. Cl. 156—405.1 **2 Claims**



1. An apparatus for applying a rubber sheet onto a tire making drum comprising:

a movable main frame,

a tire making drum for applying thereto a rubber sheet, provided rotatably in the vicinity of one end of the movable main frame,

a sheet attracting and transferring means, located adjacent to the movable main frame, for attracting a long rubber sheet in the vicinity of its initial end and for transferring the long rubber sheet to the tire making drum,

a press roller means, disposed adjacent to the tire making drum, for press-contacting the initial end of the long rubber sheet onto the tire making drum, and

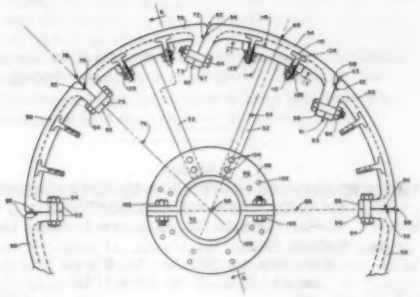
a cutter means for subsequently cutting the long rubber sheet, already applied onto said tire making drum, to a length corresponding to about one circumference of the tire making drum, said cutter means being provided adjacent to the sheet attracting and transferring means.

4,448,628

SEGMENTAL MANDREL FOR MAKING WOUND FILAMENT STRUCTURES

Rexeene S. Stott, 123 W. 4th N., Brigham City, Utah 84302

Filed Jul. 14, 1982, Ser. No. 398,133
Int. Cl.³ B29C *1/13;* **B28B** *21/48, 21/64*
U.S. Cl. 156—425 **9 Claims**



1. A hollow mandrel for forming a reinforced shell thereabout, said mandrel having a right cylinderical body with domed end portions and a central longitudinal axis, which comprises:

a. a center shaft adapted for mounting for rotation in a lathe:

b. a plurality of longitudinal sector pieces demountably assembled in edge-to-edge relationship to define the periphery of said mandrel each sector piece including a sector section of said right cylinderical body and sector sections of said domed end portions;

c. means for supporting said sector pieces in concentric relation to said center shaft;

d. means for demountably securing said supporting means to said sector pieces; and

e. means for demountably securing said supporting means to said shaft;

wherein a first one of said sector pieces has spaced-apart edges defined by inwardly directed flanges wherein the inner lateral dimension of said first sector piece is at least equal to the outer lateral dimension of said first sector piece;

wherein a second and a third sector piece each have a first edge defined by an inwardly directed flange complementary to the adjacent edge of said first sector piece, and each have a second edge defined by an inwardly directed flange complementary to the edges of the remaining sector pieces; and

wherein all remaining sector pieces have spaced-apart edges defined by inwardly directed flanges, said edges lying in the plane passing through said central axis each said means for supporting being a spoke removably attached to said shaft, and being removably attached to section piece by plural studs generally radially disposed relative said shaft in such a manner that said spoke can be detached from said section piece by movement of said spoke axially of said shaft and laterally of said studs.

4,448,629

CUTTER ASSEMBLY

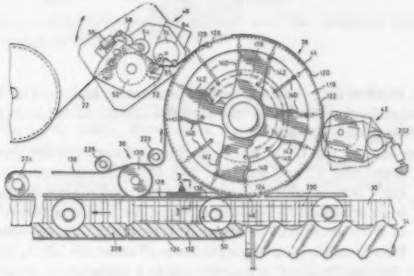
Martin D. Malthouse, Toronto, and Heinz K. Groeger, Thornhill, both of Canada, assignors to Associpak International Inc., Markham, Canada

Division of Ser. No. 98,085, Nov. 28, 1978, Pat. No. 4,323,416. This application Nov. 13, 1981, Ser. No. 321,004

Claims priority, application Canada, Dec. 5, 1978, 317428; Nov. 22, 1979, 340448

Int. Cl.³ B32B *31/18*

U.S. Cl. 156—510 **13 Claims**



1. For use in a machine having a feed mechanism to feed a strip of material along a predetermined path and into engagement with a, transport device a cutter assembly located in said path for severing said strip of sheet material, into discrete pieces to be carried by said transport device said cutter assembly comprising:

a fixed support,

a first knife element attached to said fixed support to extend transverse to said strip,

a rotatable knife carrier mounted for rotation about a first axis,

a second knife element attached to said rotatable knife carrier for movement therewith,

drive means to rotate said rotatable knife carrier about said first axis and move said second knife element past said first knife element to produce a cutting action, said knife elements diverging in the direction of travel of said second knife element to provide progressive severing of said strip of sheet material in a direction transverse to the strip, and

cam means associated with said rotatable knife carrier and moveable into said path to engage said strip of sheet material and during a latter part of said cutting action out of said path to disengage said strip whereby tension is removed from the strip between said cutter assembly and said label carrier during the latter part of said cutting action.

4,448,630

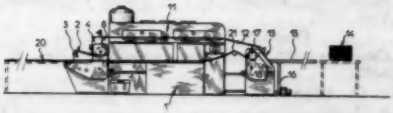
MACHINE FOR APPLYING A FILM

Philippe Blanquart, 43 rue du Marais, 59152 Tressin (Nord), France

Filed Jul. 13, 1982, Ser. No. 397,805

Int. Cl.³ B32B *31/00*

U.S. Cl. 156—514 **8 Claims**



1. Machine for applying film intended in particular for applying a film of polypropylene or acetate to a cardboard support comprising cut-outs, comprises a winding arrangement in which is stored the roll of film, a station for glueing the surface of the film, a tunnel oven in which the glued film is heated, an applicator unit composed of a pressure roller and a counter-pressure roller pressed one against the other, between which passes the glued film superimposed on the front side of the cardboard supports, characterised by the fact that means deflect the arrangment of the cardboard support coated with film leaving the applicator unit in order to separate it from the counter-pressure roller.

4,448,631

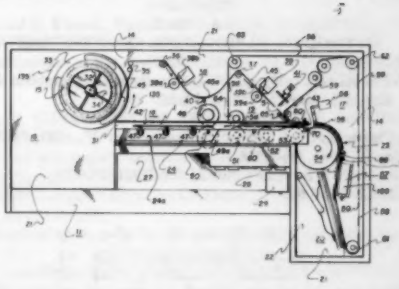
ENCODABLE STRIP ATTACHMENT APPARATUS

Charles K. Eaton, Lewisville; Eugene C. Nolting, Coppell, and Thomas J. Norman, Jr., Richardson, all of Tex., assignors to BancTec, Inc., Dallas, Tex.

Continuation of Ser. No. 348,421, Feb. 12, 1983, abandoned, which is a continuation of Ser. No. 228,334, Jan. 26, 1981, abandoned, which is a continuation of Ser. No. 52,022, Jun. 25, 1979, abandoned. This application May 25, 1983, Ser. No. 498,060

Int. Cl.³ B65C *5/02*

U.S. Cl. 156—521 **2 Claims**



1. Encodable strip attachment apparatus for attaching discrete strips of encodable material to documents of various lengths, comprising:

a. supply means for retaining, at a supply station, a continuous supply of encodable material of the type having an encodable band portion and a heat activatable adhesive bearing portion;

b. supply transport means for transporting said encodable material along a first path to an alignment station;

c. document transport means for transporting documents along a second path different from said first path, to said alignment station;

d. alignment means, disposed at said alignment station, for independently aligning respective leading edges of said encodable material and said document, and for aligning a defined portion of said encodable material and a document along a linear edge of the document in abutting relationship with a linear edge of said encodable band portion when said document and said encodable material are sealed together;

e. a single sealing means, disposed at a strip attachment station, for heat-sealing only the adhesive bearing portion with said document along the entire length thereof in a single step, thereby to provide an encodable material modified document;

f. stacking means, disposed at an output station, for stacking said encodable material modified document with other encodable material modified documents; and

g. a friction belt drive assembly for assistably transporting the encodable material and said documents to said alignment station, for independently transporting the aligned document and encodable material continuously from the

alignment station to the strip attachment station, and for transporting the encodable material modified documents to the output station; said friction belt drive assembly comprising a first driven continuous document transport belt for transporting said documents to said alignment means, a second driven continuous belt for translating severed strips of said encodable material to said alignment means, said first and second belts passing into cooperative relationship with said alignment and sealing means, so that the aligned document and strip of encodable material are aligned at their respective leading edges and transported to the strip attachment station, said first and second belts being in side by side relationship at said alignment means and at said sealing means, and means for driving said first and second belts at the same speed.

4,448,632

METHOD OF FABRICATING SEMICONDUCTOR DEVICES

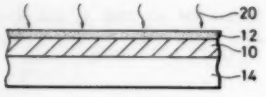
Yoichi Akasaka, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 21, 1982, Ser. No. 380,597

Claims priority, application Japan, May 25, 1981, 56-79813; May 27, 1981, 56-80565

Int. Cl.³ C30B *33/00*; H01L *21/428*

U.S. Cl. 156—603 **16 Claims**



1. A method of fabricating semiconductor devices, comprising the steps of forming a polycrystalline silicon layer on an insulating or amorphous layer; irradiating said polycrystalline silicon layer with a laser or electron beam so as to increase the grain size of said polycrystalline silicon layer and to provide a plurality of monocrystals in the polycrystalline layer; epitaxially forming a layer primarily containing silicon on said altered polycrystalline silicon layer; and melting said epitaxially grown layer and said polycrystalline silicon layer with an irradiation of a laser or electron beam so as to obtain a monocrystalline layer from said epitaxially grown layer and said polycrystalline silicon layer.

9. A method of fabricating a semiconductor device, comprising the steps of forming a polycrystalline silicon layer on an insulating or amorphous layer; irradiating said polycrystalline silicon layer with a laser or electron beam so as to increase the grain size of said polycrystalline silicon layer and to provide a plurality of monocrystal in the polycrystalline layer; epitaxially forming a layer primarily containing silicon on said altered polycrystalline silicon layer; partially oxidizing said epitaxially grown layer to form an oxide layer spreading through said polycrystalline silicon layer to said insulating or amorphous layer to thereby electrically separate a non-oxidized portion of said epitaxially grown layer from the remaining portions thereof; and melting said non-oxidized portion of said epitaxially grown layer and said polycrystalline silicon layer beneath said non-oxidized portion with a laser or electron beam to monocrystalline said epitaxially grown and polycrystalline silicon layers.

4,448,633

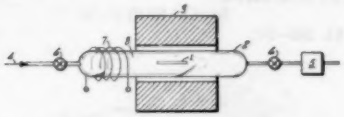
PASSIVATION OF III-V SEMICONDUCTOR SURFACES BY PLASMA NITRIDATION

Alexander J. Shuskus, West Hartford, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Nov. 29, 1982, Ser. No. 445,384

Int. Cl.³ C23C *11/08*; C30B *25/10*

U.S. Cl. 156—610 **6 Claims**



1. Method for producing surface passivating layers on III-V semiconductor articles by nitriding the surface of the articles including the steps of:

(a) heating the III-V article to a temperature greater than about 400° C. and less than 500° C. while contacting the III-V article with a nitrogen plasma, said plasma having been produced by ionizing nitrogen gas having a pressure of from about 0.01 to about 10 torr, to provide an initial III-nitride layer having a thickness of about 20–100 Å, and

(b) heating the III-V semiconductor to a temperature greater than 500° C. and less than about 700° C. while contacting the III-V surface with a nitrogen plasma to produce a thicker nitride layer, said plasma having been produced by ionizing nitrogen gas having a pressure of from about 0.01 to about 10 torr, so that the total thickness of the nitride layer is from about 200 to about 1000 Å.

4,448,634

PROCESS FOR POLISHING III-V-SEMICONDUCTOR SURFACES

Ingolf Lampert, Burghausen, Fed. Rep. of Germany, assignor to Wacker-Chemitronic Gesellschaft fur Elektronik-Grundstoffe mbH, Burghausen, Fed. Rep. of Germany

Filed Jul. 15, 1983, Ser. No. 513,813

Claims priority, application Fed. Rep. of Germany, Oct. 7, 1982, 3237235

Int. Cl.³ H01L *21/306*; B44C *1/22*; C03C *15/00, 25/06*

U.S. Cl. 156—636 **6 Claims**

1. In a process for polishing III-V semiconductor surfaces, in which, in the polishing operation, a solution containing an alkali metal hypochlorite and a liquid containing a mechanical polishing component are applied to the surface to be polished, the improvement comprising the steps of:

adjusting the solution containing the alkali metal hypochlorite to a pH value of from 8.5 to 11 by the addition of buffering components; and

adding a complex-forming component to the liquid containing the mechanical polishing component.

4,448,635

METHOD OF ETCHING CAVITIES AND APERTURES IN SUBSTRATES AND DEVICE FOR CARRYING OUT SAID METHOD

Hendrik K. Kuiken, and Rudolf P. Tijburg, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 4, 1983, Ser. No. 463,761

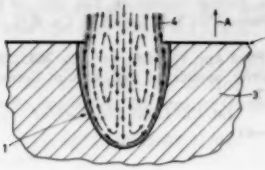
Claims priority, application Netherlands, Nov. 8, 1982, 8204307

Int. Cl.³ H01L *21/306*; C23F *1/02*; B44C *1/22*; C03C *15/00*

U.S. Cl. 156—637 **6 Claims**

1. A method of etching cavities and apertures in a substrate comprising subjecting said substrate to the action of an etchant characterized in that the etching takes place in an artificial

gravitational field causing a relative movement of the etchant in regard to the substrate solely by virtue of the difference of



the density between the etchant and the products formed during etching.

4,448,636

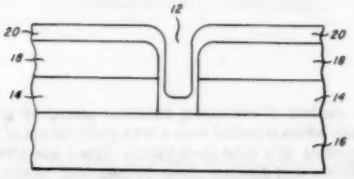
LASER ASSISTED LIFT-OFF

Samuel C. Baber, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 2, 1982, Ser. No. 384,355

Int. Cl.³ B44C *1/22;* **C03C** *15/00;* **B23K** *9/00;* **B05D** *5/12*

U.S. Cl. 156—643 **17 Claims**



1. A method for patterning thin films in integrated circuit processing, comprising the steps of:

providing a substrate having an integrated circuit surface;

providing a patterned layer of organic polymer on said surface;

depositing a thin film of a preselected material both over portions of said patterned layer of organic polymer and also over poritons of said substrate which are not covered by said patterned layer of organic polymer;

heating said thin film with a pulse or radiation, whereby portions of said polymer in contact with said film are heated to break adhesion between said film and said polymer; and

removing separated portions of said film from said polymer layer.

4,448,637

ETCHING METHOD OF CONDUCTIVE FILM

Masanori Hiraishi, Himeji, and Masashi Sugata, Hyogo, both of Japan, assignors to Daicel Chemical Industries, Ltd., Sakai, Japan

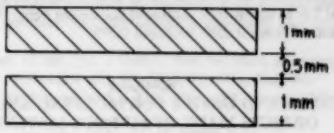
Filed Dec. 13, 1982, Ser. No. 449,091

Claims priority, application Japan, Dec. 28, 1981, 56-214123; Jun. 25, 1982, 57-110356

Int. Cl.³ C23F *1/02;* **B44C** *1/22;* **C03C** *15/00, 25/06*

U.S. Cl. 156—635 **7 Claims**

1. A method of producing a pattern of an electrically conductive film on a substrate comprising: providing a substrate coated with a continuous layer of an electrically conductive material; depositing an etchant composition on selected areas of said layer, said etchant composition consisting essentially of an aqueous solution of an etching agent effective for reacting with said electrically conductive material to form water-soluble reaction products, said aqueous solution containing dissolved therein from 0.01 to 30% by weight of a water-soluble organic polymer effective to increase the viscosity of said composition to at least 10 cps, said aqueous solution also containing dissolved therein up to 30% by weight of a polyhydric alcohol capable of preventing the evaporation of water from said etchant composition; maintaining said etchant composition on said selected areas of said layer until said etching agent has reacted with said electrically conductive material to form water-soluble reaction products; and then applying water to remove said etchant composition and said water-soluble reaction products from said layer.



4,448,638

PAPER WEBS HAVING HIGH BULK AND ABSORBENCY AND PROCESS AND APPARATUS FOR PRODUCING THE SAME

Bernard G. Klowak, Neenah, Wis., assignor to James River-Dixie/Northern, Inc., Norwalk, Conn.

Continuation of Ser. No. 182,835, Aug. 29, 1980, abandoned. This application Sep. 29, 1982, Ser. No. 426,973

Int. Cl.³ D21H *5/24*

U.S. Cl. 162—112 **11 Claims**

1. A process for producing paper webs having exceptional bulk and absorbency, comprising the steps of:

(a) mixing a predetermined amount of chemical debonding agent which inhibits the formation of interfiber bonds into a pulp furnish;

(b) forming the pulp furnish and debonding agent mix into a web;

(c) pressing the web to reduce the moisture content thereof;

(d) applying the web to a heated, moving creping surface and drying the web on the creping surface;

(e) simultaneously uniformly applying a predetermined amount of creping adhesive to the creping surface ahead of the position at which the web is applied to the moving creping surface;

(f) the amount of debonding agent mixed into the pulp furnish and the amount of creping adhesive applied to the creping surface selected such that substantial splitting apart of the web would occur if the web were pulled from the creping surface; and

(g) creping the dried web by removing the web from the creping surface with the creping blade having a cutting angle of about 72° or less such that crepes are formed on both sides of the web.

4,448,639

MINERAL FIBER-CONTAINING PAPER FOR THE PRODUCTION OF GYPSUM WALLBOARD PRODUCT PREPARED THEREWITH

William J. Long, Chicago, Ill., assignor to United States Gypsum Company, Chicago, Ill.

Filed Jun. 24, 1982, Ser. No. 391,627

Int. Cl.³ D21H *1/02*

U.S. Cl. 162—124 **12 Claims**

1. A method for the preparation of porous mineral fiber-containing paper cover sheet material suitable for use in preparing gypsum wallboard, which comprises forming an aqueous slurry comprising cellulose fibers, mineral fibers containing substantially all the shot resulting from their formation, cellulose gel, a polymeric latex binder and a flocculant without said shot being released from the mineral fibers, applying said slurry to a paper-making machine and forming paper there-

from, and drying the paper; said cellulose fibers being present on a dry weight basis in an amount from about 65% to about 95%, said shot-containing mineral fibers being present in an amount of from about 5% to about 40%, said cellulose gel being present in an amount of from about 1% to about 10%, said polymeric latex binder being present in an amount of from about 1% to about 10%, and said flocculant being present in an amount of from 0.05% to about 0.5%.

4,448,640

PROCESS AND DEVICE FOR MOLDING AND DRYING OBJECTS MADE OF FIBROUS MATERIALS

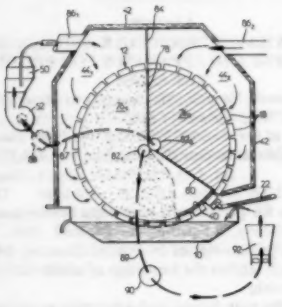
Bernard Brault, Paris, and Paul H. Marchal, Thann, both of France, assignors to Societe Anonyme dite: Air Industrie, France

Filed Feb. 4, 1982, Ser. No. 345,697

Claims priority, application France, Feb. 17, 1981, 81 03099

Int. Cl.³ D21J *7/00*

U.S. Cl. 162—218 **3 Claims**



1. A device for molding and drying articles made of fibrous materials, of a type having a cylinder turning around its longitudinal axis, said cylinder carrying along the length of its lateral faces a row of porous molds, said molds partially dipping into a vat maintained with a constant level of a fibrous product paste made of an appropriate liquid, means for removing and transferring articles from said molds which periodically and successively applies itself on each of the aforesaid row of molds, and a belt conveying the products to a dryer, characterized in that said cylinder (12) is surrounded on its entire lateral surface between paste vat (10) and said removing and transferring means (22), by an arrangement of insulating walls (42) which define with cylinder (12) and vat (10) an enclosure (44) into which opens a first conduit for conveying hot air (46) and connected in series to a ventilator (52), a reheater (50), and a second conduit (54) to which are connected a plurality of extraction conduits located along the length of the dryer (56) for extracting heated air therefrom and an exhaust conduit (64) to the atmosphere; wherein the interior volume of said cylinder (12) is divided by first and second radial partitions (78,80), fixed in space, into a first draining and predrying chamber (76_1) and a first drying chamber (76_2), both in the form of cylindrical sections, said second partitions (80) terminating opposite an edge of the insulating wall (42), contiguous with said removing and transferring means (22); said enclosure also being divided by a third partition (84) positioned radially outwardly of the first radial partition (78) said third portion together with the exterior surface of the cylinder (12) and walls of said enclosure define a second draining and predrying chamber (76_1), and a second drying chamber; (44_2) connected to said first draining and predrying chamber and said first drying chamber; said first conduit opening into said second drying chamber; a third conduit connecting a heating means for heating new air to said second raining and predrying chamber.

4,448,641

METHOD FOR EVACUATING EMISSIONS OF A COKE OVEN

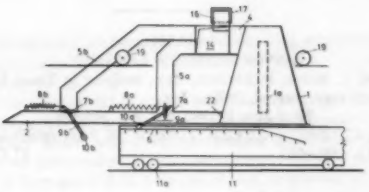
August Lucas, Datteln-Horneburg, Fed. Rep. of Germany, assignor to Firma Carl Still GmbH & Co. K.G., Fed. Rep. of Germany

Filed Apr. 14, 1982, Ser. No. 368,050

Claims priority, application Fed. Rep. of Germany, Apr. 15, 1981, 3115217

Int. Cl.³ C10B *33/00, 41/02*

U.S. Cl. 201—41 **5 Claims**



1. A method of evacuating emissions caused by glowing coke cake which is pushed over a coke guide car out of a coke oven opening of a coke oven battery, into a quenching car movable in a feed direction along the coke oven battery, using a hood structure which is also movable along the coke oven battery and which has a front portion and a rear portion, the coke oven battery having a fixed exhaust system with a selected amount of suction power for receiving the emissions, and the hood structure having duct means for communicating the coke guide car, the front portion and the rear portion with the fixed exhaust system, the front and rear portions of the hood structure having a combined length in the feed direction at least equal to a length of the quenching car in the feed direction, the method comprising:

positioning the front portion of the hood structure in alignment with the coke oven opening, with the rear portion extending downstream thereof in the feed direction;

moving the quenching car in the feed direction under the front portion;

the coke cake being pushed into the quenching car as it passes under the front portion;

applying the entire selected amount of suction power over the duct means for communicating the coke guide car and the front portion to the fixed exhaust system during a starting period of coke pushing when the quenching car is under the front portion only; and

distributing some of the selected amount of suction power to the duct means for communicating the rear portion to the fixed exhaust system as a forward end of the quenching car in the feed direction moves under the rear portion of the hood structure;

the front and rear portions of the hood structure both being provided with a width extending across an entire width of the quenching car, the front portion being higher above the quenching car than the rear portion and sufficiently high to cover an entire height of the coke oven opening, the duct means for communicating the rear portion with the exhaust system including a valve which is activatable by engagement with the quenching car as the quenching car moves in the feed direction under the rear portion.

4,448,642
APPARATUS FOR EVACUATING EMISSIONS OF A COKE OVEN

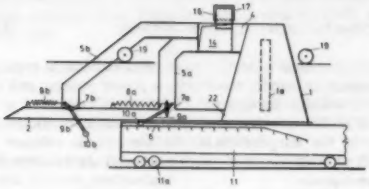
August Lucas, Datteln-Horneburg, Fed. Rep. of Germany, assignor to Firma Carl Still GmbH & Co. K.G., Fed. Rep. of Germany

Division of Ser. No. 368,050, Apr. 14, 1982. This application Apr. 5, 1983, Ser. No. 482,166

Claims priority, application Fed. Rep. of Germany, Apr. 15, 1981, 3115217

Int. Cl.³ C10B *33/00, 41/02*

U.S. Cl. 202—263 6 Claims



1. A coke handling apparatus for use with a coke oven battery having a plurality of horizontally arranged side by side coke ovens with a quenching car trackway for a coke quenching car disposed alongside the battery outwardly of a coke cake guide car which is also movable along the ovens of the battery on a guide car trackway, comprising;

a coke quenching car for movement on the quenching car trackway;

a stationary closed exhaust system adapted to be disposed adjacent the battery and having an exhaust connection adjacent said quenching car;

means defining a hood support and trackway adapted to be adjacent the quenching car trackway;

a hood structure supported on said hood support and trackway and moveable therealong and connected to said exhaust connection and having a first hood portion of a size to overlay a portion of said quenching car across its width in a position to withdraw gases and dust from glowing coke pushed from a coke oven through the coke cake guide car and said first hood portion into said quenching car;

a second hood portion extending forwardly of said first hood portion in a position to overlay a portion of said quenching car as it is advanced with the coke which has already passed under said first hood portion;

said second hood portion having a plurality of separate exhaust channel hood connections connected to said exhaust connection with each having a control valve therein;

control means associated with said second hood portion exhaust channel hood connections to open said exhaust channel hood connections to said exhaust connection to cause additional exhaust over said quenching car, said control means including means associated with said quenching car to automatically sequentially actuate said control valves in said separate exhaust channel hood connections to selectively open and close these connections as the quenching car advances therebeneath.

4,448,643
ISOLATION OF ISOBUTENE FROM C4-HYDROCARBON MIXTURES CONTAINING ISOBUTENE

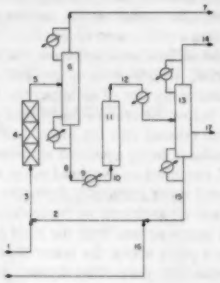
Alfred Lindner, Bobenheim-Roxheim; Klaus Volkamer, Frankenthal, and Ulrich Wagner, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 122,067, Feb. 15, 1980, abandoned. This application Jul. 13, 1981, Ser. No. 282,746

Claims priority, application Fed. Rep. of Germany, Mar. 5, 1979, 2908426

Int. Cl.³ C07C *7/148;* B01D *3/32*

U.S. Cl. 203—34 10 Claims



1. A process for isolating isobutene from C_4-hydrocarbon mixtures containing isobutene which comprises

(a) reacting the mixture with a primary C_3- or C_4-alcohol in the presence of an acid condensing agent, to form the tertiary ether,

(b) taking the reaction mixture off at the exit of the etherification stage at a temperature from 3° to 30° C. lower than the mean temperature in the etherification stage,

(c) separating off the unconverted hydrocarbons, and

(d) composing the tertiary ether in the presence of an acid catalyst.

4,448,644
METHOD OF PRODUCING ETHANOL-WATER AZEOTROPE FROM CRUDE ETHANOL

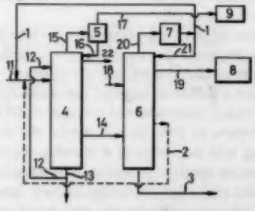
Brian R. Foster, and William T. Woodfin, both of Hull, England, assignors to BP Chemicals Limited, London, England

Continuation of Ser. No. 326,362, Dec. 1, 1981, abandoned. This application May 12, 1983, Ser. No. 493,653

Claims priority, application United Kingdom, Dec. 6, 1980, 8039196

Int. Cl.³ B01D *3/40;* C07C *29/88*

U.S. Cl. 203—37 10 Claims



1. A process for purifying crude ethanol to obtain substantially pure ethanol-water azeotrope, comprising separately feeding the crude ethanol and water into a single hydroselection column having a refluxing section above the water feed

point, an intermediate section between the water feed point and the crude ethanol feed point, a stripping section between the crude ethanol feed point and a produce side draw tray below the crude ethanol feed point, and a base section below the prouduct side draw tray wherein the ratio of theoretical trays in the refluxing, intermediate and stripping sections is in the range 0.2–0.7:1:2.0–2.5, the hydroselection column containing less than 100 actual trays and being operated at temperatures between 120° C. and 180° C. and at a pressure above 50 psia, the water being fed to the column at a point above the crude ethanol feed point and the molar ratio of water fed to ethanol in the crude ethanol feed being at least 10:1, withdrawing an overhead vapour fraction containing a substantial portion of volatile impurities, and returning part of the overhead vapour fraction after condensation to the column as liquid reflux maintaining a reflux ratio of less than 100:1 expressed on the total amount of fluid removed from the column above the water feed point, withdrawing a purified aqueous ethanol sidestream substantially free of all impurities from the produce side draw tray below the crude ethanol feed point, feeding the purified aqueous ethanol into the lower half of a rectification column, said column being operated at temperatures between 70° and 125° C. recycling an overhead purge stream containing acetaldehyde and other impurities from the rectification column to the crude ethanol feed to the hydroselection column, withdrawing a purge stream from the head of the hydroselection column at a point above the water feed point, and withdrawing a substantially pure ethanol-water azeotrope containing less than 5 ppm of any of the impurities, except methanol, in the crude ethanol feed as a side-stream from the upper half of the column and an aqueous effluent substantially free from ethanol from the base of the column.

4,448,645

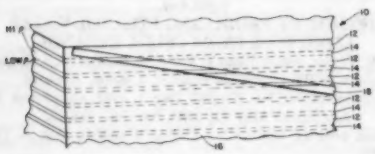
ELECTRODING OF MULTI-LAYERED EPITAXIAL STRUCTURES

Glenn D. Robertson, Jr., Malibu, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 11, 1983, Ser. No. 512,847

Int. Cl.³ C25D *5/02*

U.S. Cl. 204—15 **3 Claims**



1. The method of forming contacts for separate electrical connections to low-resistivity layers of an epitaxially grown stack of alternate high and low-resistivity layers, said method comprising the steps of:

coating one edge of the stack with a dielectric;

forming a diagonal strip opening across the edge through the dielectric to thereby expose the edges of the layers;

forming on a different edge of the stack a metallic contact which makes electrical connections to all of the low-resistivity layers, to provide a common electrode;

immersing said one edge in a metallic plating solution and applying an electric potential between said common electrode and said solution, so that current flows through each of the low-resistivity layers, and at the point where it is exposed to the plating solution through said strip opening a deposit of metal is formed, to thereby provide a contact area for each low-resistivity layer for electrical connections; and

removing said common electrode.

4,448,646

PROCESS FOR PREPARATION OF HIGH PURITY METALS BY THE ELECTROCHEMICAL REDUCTION OF CHALCOGENIDE ESTERS

Santokh S. Badesha, Ontario, N.Y., and Rafik O. Loutfy, Willowdale, Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 30, 1983, Ser. No. 509,752

Int. Cl.³ C25C *1/22*

U.S. Cl. 204—59 M **6 Claims**

1. A process for the preparation of selenium, tellurium, or arsenic of high purity, which comprises subjecting the following pure esters of these elements, which esters are of the formulas:

$$(C_2H_5O)_2SeO \quad (I)$$

$$Te(OCH_2CH_2O)_2 \quad (II)$$

$$(OCH_2)_2As—OCH_2CH_2O—As—(OCH_2)_2 \quad (III)$$

to an electrochemical reduction in an electrochemical apparatus, containing an anode, a cathode, a power source, and an electrolytic solution comprised of the esters contained in a solution of tetrabutyl ammonium perchlorate, and cellosolve, and wherein the temperature of the electrolytic solution is maintained at from about 15 degrees centigrade to about 80 degrees centigrade.

4,448,647

ELECTROCHEMICALLY TREATED METAL PLATES

Thomas N. Gillich, Whitehouse Station; John E. Walls, Annandale; Stanley F. Wanat, Scotch Plains, and William J. Rozell, Martinsville, all of N.J., assignors to American Hoechst Corporation, Somerville, N.J.

Continuation of Ser. No. 188,091, Sep. 26, 1980, abandoned. This application Sep. 27, 1982, Ser. No. 424,685

Int. Cl.³ C25D *11/02, 11/08, 11/10*

U.S. Cl. 204—33 **58 Claims**

1. A process for preparing an element comprising

(a) cleaning a metal article,

(b) electrolyzing said metal article made anodic using direct current in an aqueous electrolytic solution having dissolved therein a mixture of electrolytes comprising:

i. a water-soluble organic acid or mixture of two or more water-soluble organic acids selected from the group consisting of organic phosphoric acids, sulfonic acids, phosphonic acids, diethylene diamine penta acetic acid, ethylene diamine tetra acetic acid, hydroxyethyl ethylene diamine triacetic acid, and nitrilo triacetic acid; and

ii. a strong inorganic acid comprising a phosphorus oxo acid having POH groups in which the hydrogen atom is ionizable under electrolytic conditions sufficient to form an insoluble substantially non-porous metal oxide-organic complex, including said organic acid, bonded to the surface of said metal article.

4,448,648

TRIVALENT CHROMIUM ELECTROPLATING BATHS

Donald J. Barclay, Winchester; William M. Morgan, Chandlers Ford, and James M. Vigar, Winchester, all of England, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 1, 1982, Ser. No. 437,992

Claims priority, application United Kingdom, Nov. 18, 1981, 8134777

Int. Cl.³ C25D *3/06*

U.S. Cl. 204—51 **12 Claims**

1. A chromium electroplating electrolyte containing a source of trivalent chromium ions, a complexant, a buffer and a sulphur species selected from the group consisting of thiosulphates, thionates, polythionates and sulfoxylates for promoting chromium deposition, the complexant being selected so that

the stability constant K_1 of the reaction between the chromium ions and the complexant is in the range $10^6 < K_1 < 10^{12} M^{-1}$ at about 25° C.

4,448,649

TRIVALENT CHROMIUM ELECTROPLATING BATHS

Donald J. Barclay, Winchester; William M. Morgan, Chandlers Ford, and James M. Vigar, Winchester, all of England, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 1, 1982, Ser. No. 438,075

Claims priority, application United Kingdom, Nov. 18, 1981, 8134779

Int. Cl.³ C25D *3/06*

U.S. Cl. 204—51 **11 Claims**

1. A chromium electroplating electrolyte containing trivalent chromium ions, a complexant, a buffer agent and a sulphur species selected from sulphites and dithionites, the complexant being selected from aspartic acid, 5-sulphosalicylic acid and citric acid.

4,448,650

PROCESS FOR THE PREPARATION OF CYCLOPENTADEC-4-YNONE AND OF ITS 3-METHYL HOMOLOGUE

Francois Delay, Carouge, Switzerland, assignor to Firmenich SA, Geneva, Switzerland

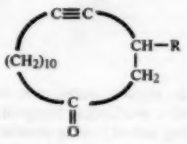
Filed May 25, 1983, Ser. No. 498,050

Claims priority, application Switzerland, Jul. 5, 1982, 4078/82

Int. Cl.³ C25B *3/02*

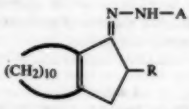
U.S. Cl. 204—59 R **5 Claims**

1. Process for the preparation of a macrocyclic acetylenic ketone of formula



(I)

wherein symbol R designates a hydrogen atom or a methyl radical which comprises subjecting to anodic oxidation, in the presence of an aliphatic or an araliphatic alcohol or a glycol, a hydrazone of formula



(II)

wherein symbol R has the above given meaning and A represents a hydrogen atom or a sulfonyl radical of formula $R^1—SO_2—$, wherein R^1 stands for a substituted or an unsubstituted aryl group.

4,448,651

PROCESS FOR PRODUCING SILICON

Jerry M. Olson, Lakewood, and Karen L. Carleton, Boulder, both of Colo., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 10, 1982, Ser. No. 387,115

Int. Cl.³ C25B *1/00*; C25C *7/00*

U.S. Cl. 204—60 **24 Claims**

1. A process for producing silicon comprising:

forming an alloy of Cu and Si;

positioning said alloy in a dried, molten salt electrolyte to form a solid Cu/Si anode structure therein;

placing electrically conductive cathode means within said electrolyte for plating silicon thereon;

purifying said electrolyte to remove dissolved oxides therefrom; and

applying a potential between said anode and cathode means in an amount sufficient to form substantially pure silicon on said cathode means in the form of substantially dense, coherent deposits.

4,448,652

DEVICE FOR THE CATHODE SPUTTERING OF A METAL

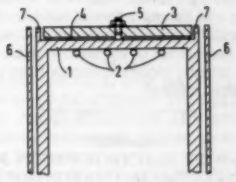
Horst Pachonik, Taufkirchen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Sep. 30, 1982, Ser. No. 431,552

Claims priority, application Fed. Rep. of Germany, Dec. 7, 1981, 3148354

Int. Cl.³ C23C *15/00*

U.S. Cl. 204—298 **10 Claims**



1. Device for cathode sputtering of metal, comprising a holder, means for cooling said holder, a heat conducting paste layer disposed on said holder, a target disposed on said heat conducting paste layer, and a bolt connecting said target to said holder with said heat conducting paste layer disposed therebetween as a heat transfer medium, said target being formed of the metal to be sputtered.

4,448,653

CATHODE ARRANGEMENT FOR SPUTTERING MATERIAL FROM A TARGET IN A CATHODE SPUTTERING UNIT

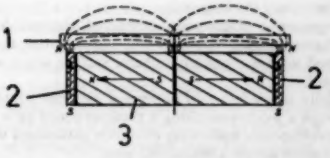
Urs Wegmann, Balzers, Liechtenstein, assignor to Balzers Aktiengesellschaft, Liechtenstein

Filed Oct. 30, 1981, Ser. No. 311,267

Claims priority, application Switzerland, Oct. 14, 1980, 7637/80

Int. Cl.³ C23C *15/00*

U.S. Cl. 204—298 **10 Claims**



1. A cathode arrangement for sputtering material from a target in a cathode sputtering unit, comprising a frame-shape magnet being disposed adjacent the target remote from the surface to be sputtered, and another magnet being provided within said frame-shap magnet, and with the directions of magnetization of the two magnets forming an angle of between 45° and 90°, said frame-shape magnet being made of a perma-

nent-magnet mterial having an energy density of at least 40 kJ per m^3 and the other magnet being made of a permanent-magnet material having an energy density of less than 40 kJ per m^3.

4,448,654

PROCESS AND ANODE FOR MOLTEN SALT ELECTROLYSIS

Stanley F. Spangenberg; Arlington L. Finley, both of Midland, and D. James Searson, Sanford, all of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 204,733, Nov. 6, 1980, Pat. No. 4,370,216. This application Jun. 18, 1982, Ser. No. 389,835

Int. Cl.³ C25C *3/00, 3/04, 3/06*

U.S. Cl. 204—70 **4 Claims**

1. In an electrolytic process comprising:

imposing an electrical potential on an anode and a cathode in an electrolytic cell sufficient to cause electrolysis of electrolyte to occur;

removing the products of electrolysis from the cell;

wherein the improvement comprises using as the anode

(a) an uncoated, uncatalyzed hollow ceramic member which comprises a single phase material of an oxide of titanium and a dopant suited to prevent at least a portion of titanium ions having a formal valence of +3 from converting to titanium ions having a formal valence of +4; and

(b) an electrically conductive substance occupying at least a portion of the interior of the hollow ceramic member and adapted to transfer electrical energy from a power source to the ceramic member.

4,448,655

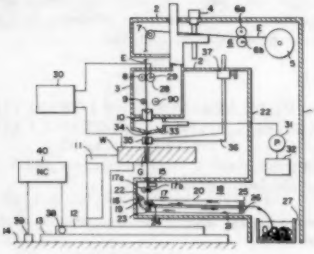
TRAVELING-WIRE ELECTROEROSION MACHINING ELECTRODE AND METHOD

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Filed Nov. 17, 1981, Ser. No. 322,381

Int. Cl.³ B23P *1/10, 1/12;* **B23K** *9/16*

U.S. Cl. 204—129.1 **29 Claims**



5. A method of electroerosively machining an electrically conductive workpiece with a traveling-wire machining electrode, comprising the steps of:

(a) preparing a continuous, elongated element having a thickness ranging between 0.1 and 0.5 mm and being formed with a rugged peripheral surface along a length thereof;

(b) axially displacing said elongated element continuously through a workpiece along a predetermined path to form a traveling-wire machining electrode juxtaposed with said workpiece across a machining gap;

(c) supplying a machining liquid to said gap;

(d) passing a machining current between said electrode and said workpiece through said machining gap to electroerosively remove material from said workpiece, thereby machining the latter while causing gaseous bubbles to be formed in the gap by electrical decomposition of said machining liquid which bubbles tend to be adherent on the machining surface of said electrode and thus act as a thermal insulator between said machining surface and said machining liquid;

(e) relatively displacing said path and said workpiece transversely to form a machined contour in the latter; and

(f) promoting detachment of said gaseous bubbles from said machining surface by forming said elongated element with said rugged peripheral surface acting to facilitate detachment of said gaseous bubbles from said machining surface of said electrode element, said rugged peripheral surface comprising a multiplicity of spaced projections of an electrically conductive material added in a predetermined uniform, discrete pattern on said elongate element, said projections having a height ranging between one tenth and one third of the thickness of said elongate element.

4,448,656

ELECTROLYTIC/ELECTRIC DISCHARGE MACHINING OF A NON-CONDUCTIVE WORKPIECE

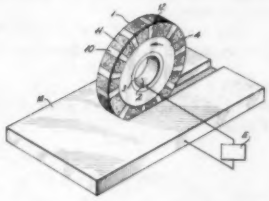
Akio Kuromatsu, Yokohama, Japan, assignor to Ohyo Jiki Labolatory Company Ltd., Kawagawa, Japan

Filed Jun. 22, 1982, Ser. No. 390,851

Claims priority, application Japan, Jun. 24, 1981, 56-96631; May 8, 1982, 57-75986

Int. Cl.³ B23P *1/10, 1/12;* **B23K** *9/16*

U.S. Cl. 204—129.4 **9 Claims**



1. A method for the electrolytic/electric discharge machining of a non-conductive workpiece, comprising

preparing a grinding wheel having conductive regions and non-conductive abrasive regions circumferentially alternately arranged at least on the circumferential edge of the wheel,

placing a non-conductive workpiece beneath the surface of an electrolyte, and

bringing the rotating grinding wheel in contact with said non-conductive workpiece while applying voltage between the conductive regions of said grinding wheel and said non-conductive workpiece.

4,448,657

METHODS EMPLOYING MAGNETIC FIELDS FOR CONTROLLING EMULSION POLYMERIZATION

Nicholas J. Turro, Tenafly, N.J., assignor to The Trustees of Columbia University in the City of New York, New York, N.Y.

Filed Oct. 23, 1981, Ser. No. 314,664

Int. Cl.³ C08F *2/50;* **C03G** *19/00*

U.S. Cl. 204—155 **9 Claims**

1. A method of controlling an emulsion polymerization reaction comprising employing as an initiator for the reaction an oil-soluble photoinitiator which produces triplet radical pairs, irradiating the photoinitiator to produce such triplet radical pairs, providing for the photoinitiator a plurality of loci of polymerization initiation having the restricted dimensionality of microscopic reaction vessels, and applying a magnetic field having a strength of at least about 100 Gauss and sufficient to afford significant enhancement of polymerization initiation.

4,448,658

USE OF HIGH-INTENSITY RAPIDLY-PULSATING ACTINIC RADIATION IN THE CHLORINATION OF POLYVINYL CHLORIDE RESIN

Alan J. Olson, Westlake, Ohio, assignor to The B. F. Goodrich Company, Arkon, Ohio

Filed Aug. 25, 1982, Ser. No. 411,161
Int. Cl.³ C08F 8/22
U.S. Cl. 204—159.18 8 Claims

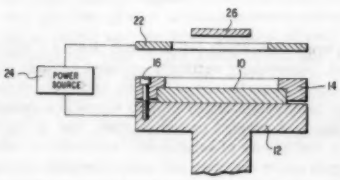
1. The process for chlorinating macrogranules of polyvinyl chloride resin comprising associating said macrogranules of polyvinyl chloride resin with diatomic chlorine and exposing said macrogranules of polyvinyl chloride resin while associated with said diatomic chlorine to high-intensity rapidly-pulsating actinic radiation, said radiation having a wavelength spectrum of from about 150 to 1000 nanometers and pulses at a rate of from about 1 to 120 pulses per second with a pulse width of from 1×10^{-3} to 1×10^{-6} second and with the energy of each pulse being from about 50 joules to about 1000 joules.

4,448,659

METHOD AND APPARATUS FOR EVAPORATION ARC STABILIZATION INCLUDING INITIAL TARGET CLEANING

Charles F. Morrison, Jr., Boulder, Colo., assignor to VAC-TEC Systems, Inc., Boulder, Colo.

Filed Sep. 12, 1983, Ser. No. 531,258
Int. Cl.³ C23C 15/00
U.S. Cl. 204—192 R 101 Claims



1. Apparatus for evaporation arc stabilization comprising

a target having a surface of non-permeable material to be evaporated;

means for establishing an arc on the target surface for evaporating the target material, the arc being characterized by the presence of charged particles and a cathode spot which randomly migrates over said target surface;

a confinement ring surrounding the target surface, the ring being composed of a magnetically permeable material to thereby confine the cathode spot to the target surface; and

means for preventing said arc from moving off said target and confinement ring in response to said arc being initially applied to said target and ring to effect cleaning of contaminants therefrom.

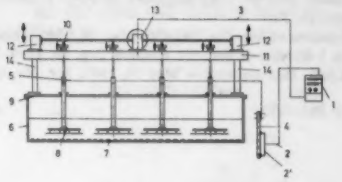
4,448,660

MONITORING APPARATUS

Peter Fabian, Freigericht, Fed. Rep. of Germany, assignor to Heraeus Elektroden GmbH, Hanau, Fed. Rep. of Germany

Filed Jun. 17, 1982, Ser. No. 389,285
Claims priority, application Fed. Rep. of Germany, Jun. 19, 1981, 3124108
Int. Cl.³ C25C 7/00
U.S. Cl. 204—225 4 Claims

1. A monitoring and control apparatus for a single flowing mercury electrolytic cell by measurements of the voltage drop in the shunted feed line of each metal anode group comprising taps at the ends of a measured section of electrical bus bars for each metal anode group electrically connected to a measuring means whereby the measured voltage drop is fed as an amplified signal to the measuring means, a control means set for a value from the total cell current divided by the number of taps comparing the actual measured values at various feed lines and a signal means activated when a set excess current is exceeded



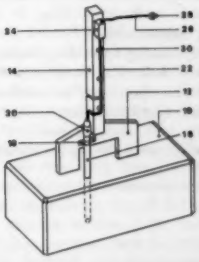
and to actuate the adjusters for a group of metal anodes to lift the metal anodes stepwise by an adjustable amount until excess current is not measured by comparison indicating that the feed line is no longer overloaded.

4,448,661

DEVICE FOR MEASURING THE BATH TEMPERATURE IN A FUSED SALT ELECTROLYTIC CELL USED FOR THE PRODUCTION OF ALUMINUM

Rolf Roggen, Sion, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Mar. 18, 1983, Ser. No. 476,621
Claims priority, application Switzerland, Apr. 2, 1982, 2037/82
Int. Cl.³ C25C 3/12; G01J 5/28, 5/08
U.S. Cl. 204—243 R 12 Claims



1. Device for measuring the bath temperature in the pot of a reduction cell used for the fused salt electrolytic production of aluminum which comprises: at least one anode in combination with said cell; a rod running approximately vertically through said anode and made of a material which transmits infra-red radiation and dissolves in the molten electrolyte at approximately the same rate as the consumption of the anode, wherein said rod is made of a material which contains no components which would excessively contaminate the aluminum produced; an infra-red detector optically coupled to the rod; at least one bundle of fibers which transmit infra-red radiation communicating between the infra-red detector and the rod; means for optically connecting said rod and fibers including a light plug between the fibers and the rod for transmitting the signal from the rod to the fibers, wherein the light plug contains a coupling fluid which transmits infra-red radiation and has an index of refraction (n_2) approximately the same as that (n_1) of the rod; and a transmitter or connecting cable for communicating an electrical signal from the infra-red detector to the control system.

4,448,662

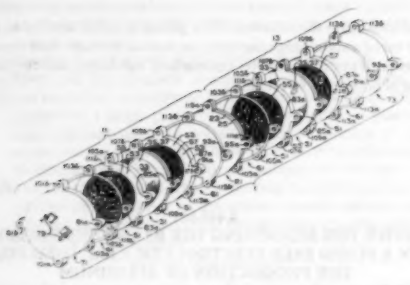
SOLID POLYMER ELECTROLYTE CHLOR-ALKALI ELECTROLYTIC CELL

Donald W. DuBois, Corpus Christi, and William B. Darlington, Portland, both of Tex., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 382,450, May 24, 1982, abandoned, which is a division of Ser. No. 076,898, Sep. 19, 1979, Pat. No. 4,342,629. This application May 19, 1983, Ser. No. 496,031

Int. Cl.³ C25C 17/12

U.S. Cl. 204—252 4 Claims



1. In an electrolytic cell comprising an anolyte compartment with an anode therein, a catholyte compartment with a cathode therein, and a permionic membrane therebetween, said anode and cathode each comprising an electroconductive substrate having electrocatalyst bonded thereto, the electrocatalyst removably bearing upon the permionic membrane, the improvement wherein the electroconductive substrates have at least about 40 percent open area, the anode and cathode compress the permionic membrane therebetween by about 1 to 20 pounds per square inch, and the permionic membrane comprises a fluorocarbon resin having the moieties:

$$-CF_2-CXX'-$$

and,

$$-CF_2-CXY-$$

where,

X is chosen from the group consisting of —F, —Cl, —H, and $-CF_3$;

X' is chosen from the group consisting of —F, —Cl, —H, $-CF_3$ and $(CF_2)_mCF_3$, where m is an integer from 1 to 5;

Y is chosen from the group consisting of —A, ϕA, —P—A, and $-O-(CF_2)_n-(P,Q,R)-A$, where P is $(CF_2-)_a$ $(CXX')_b$ $(CF_2)_c$, Q is $(-CF_2-O-CXX')_d$ and R is $(-CXX')-O-CF_2)_e$, (P,Q,R) is or contains one or more P, Q, and R;

n is 0 or 1;

a,b,c,d and e are integers from 0 to 6;

ϕ is a phenylene group and A is chosen from the group consisting of —COOH, —CN, —COF, —COCl, —COOR, —COOM, $-CONR_2R_3$, $-CO_3H$, PO_3H_2, and PO_2H_2 where R_1 is a C_1 to C_{10} alkyl group, and R_2 and R_3 are chosen from the group consisting of —H, and C_1 to C_{10} alkyl groups; and

M is chosen from the group consisting of —H and alkali metals.

4,448,663

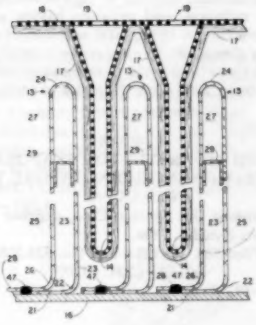
DOUBLE L-SHAPED ELECTRODE FOR BRINE ELECTROLYSIS CELL

Hiep D. Dang, Lake Jackson; Richard N. Beaver, Angleton; Frank W. Spillers, and Mark J. Hazelrigg, Jr., both of Lake Jackson, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jul. 6, 1982, Ser. No. 395,404

Int. Cl.³ C25B 11/03; C25C 7/02

U.S. Cl. 204—270 12 Claims



2. In a brine electrolysis cell in which there is a multiplicity of spaced, substantially vertically oriented cathode elements extending at least partly across the cell, said cathode elements being supported in the cell by support means in a spaced apart relationship with respect to one another; and in which cell there is a multiplicity of substantially vertically oriented and spaced apart anode elements, said anode elements extending at least partly across the cell in an interleaved and spaced apart relationship with respect to the spaced cathode elements; and in which cell the anode elements are attached to and physically supported by a substantially flat, substantially vertically oriented anode backplate; said backplate extending across the cell in a manner such that it is substantially perpendicular to the anode elements; the improvement which comprises:

at least one of the anode elements of the cell being comprised of a single piece of a metal sheet, said single metal piece having two end sections and one middle section with the surfaces of all three of these sections being substantially vertically oriented in the cell, and with at least the middle section being sufficiently foraminous to allow easy passage of gas bubbles and liquid therethrough;

said single metal piece being bent outwardly in and about its middle section in a direction away from the anode backplate so as to be interleaved between and spaced from two adjacent cathode elements in the cell in such a manner so as to form interelectrode gaps between the anode element and adjacent cathode elements;

said outwardly bent middle section being bent so that an anolyte circulation chamber is formed between spaced apart portion of it; and

said two end sections of said bent single piece of metal sheet being parallel to the anode backplate with both of the two end sections extending from the middle section in the same direction along the anode backplate, said end sections extending far enough from the middle section to overlap one another in surface-to-surface contact for at least some part of their length at a site external to the anolyte circulation chamber, said anode element being mechanically connected to said anode backplate at this external site.

4,448,664

ANODE FOR ELECTROLYSIS

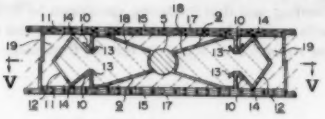
Tadao Ikegami, and Takeshi Miyamoto, both of Tamano, Japan, assignors to Chlorine Engineers Corp., Ltd., Tokyo, Japan

Filed Jun. 6, 1983, Ser. No. 501,717

Claims priority, application Japan, Jul. 22, 1982, 57-110298[U]

Int. Cl.³ C25B 11/02; H01R 43/00

U.S. Cl. 204—286 1 Claim



1. An anode for electrolysis which comprises:

an electrolytic bottom plate;

an electrically conductive bar erected on the electrolytic bottom plate,

anode supporting bodies connected to opposite sides of said conductive bar, each of said anode supporting bodies having two wing-like members projecting away from the conductive bar and ends which bend towards each other;

opposed anode bodies connected to the electrically conductive bar through contact with the wing-like members of the anode supporting bodies; and

reinforcing bodies having closed outer portions and wing-like inner portions disposed between the anode bodies, the outer portions of each of which contacts and supports the anode bodies and the inner portions of each of which contacts the ends of the anode supporting bodies and thereby further supports the anode bodies, each of the reinforcing bodies and anode supporting bodies defining a closed channel through which electrolyte may move separately from gas generated during electrolysis.

4,448,665

USE OF AMMONIA TO REDUCE THE VISCOSITY OF BOTTOMS STREAMS PRODUCED IN HYDROCONVERSION PROCESSES

Sioma Zaczepinski; Rustom M. Billimoria, both of Houston; Frank Tao, Baytown; Christopher G. Lington, Houston, and Karl W. Plumlee, Baytown, all of Tex., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Dec. 30, 1982, Ser. No. 454,804

Int. Cl.³ C10G 1/00, 1/06, 47/00; C10C 1/18

U.S. Cl. 208—8 LE 21 Claims

1. In a process for the hydroconversion of a carbonaceous feed in the presence of molecular hydrogen wherein a hydroconversion effluent containing liquids and unconverted carbonaceous material is produced, and said effluent is subjected to one or more separation steps to remove lower molecular weight liquids from said effluent and thereby produce a heavy bottoms stream containing high molecular weight liquids and unconverted carbonaceous material, the improvement which comprises contacting the feed stream to said separation step or steps at a temperature between about 300° F. and about 700° F. with sufficient added ammonia gas such that the weight ratio of said ammonia gas to said feed stream rangers between about 0.01 and about 0.6 prior to or during said separation step or said separation steps, thereby reducing and controlling the viscosity of said heavy bottoms stream.

4,448,666

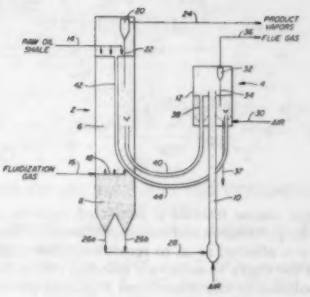
RETORTING PROCESS FOR HYDROCARBONACEOUS SOLIDS

P. Henrik Wallman, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Sep. 24, 1982, Ser. No. 423,336

Int. Cl.³ C10G 1/02; C10B 53/06, 49/16

U.S. Cl. 208—11 R 7 Claims



1. A process for pyrolyzing a particulate hydrocarbonaceous solid containing a fraction of non-fluidizable particles making up at least 50 weight percent of the total particulate hydrocarbonaceous solids which comprises:

(a) passing the hydrocarbonaceous solid downwardly through a bed of hot, solid, heat-transfer particles of fluidizable size, said bed of heat-transfer particles being fluidized by an inert gas passing upward through said bed at a superficial gas velocity sufficient to fluidize the heat-transfer particles but insufficient to fluidize the non-fluidizable fraction of the hydrocarbonaceous solids, whereby the hydrocarbonaceous solid is raised to a pyrolyzing temperature;

(b) retaining the heated non-fluidizable fraction of the hydrocarbonaceous solids in a vertical moving packed bed located below the fluidized bed of heat-transfer solids for a time sufficient to allow for the release of a substantial amount of product vapors from the pyrolyzed hydrocarbonaceous material;

(c) recovering from step (b) the product vapor and the pyrolyzed solid remaining from the non-fluidizable fraction of the hydrocarbonaceous solids, said product vapors being recovered from the top of the packed bed and are introduced into the bottom of the fluidized bed of heat-transfer solids to serve as inert fluidizing gas;

(d) drawing the fluidized, heat-transfer particles from off the top of the fluidized bed;

(e) heating the heat-transfer particles in a heating zone; and

(f) introducing the hot, heat-transfer particles of step (e) back into the fluidized bed of step (a).

4,448,667

PROCESS FOR SOLVENT EXTRACTION OF BITUMEN FROM OIL SAND

George B. Karnofsky, Pittsburgh, Pa., assignor to Dravo Corporation, Pittsburgh, Pa.

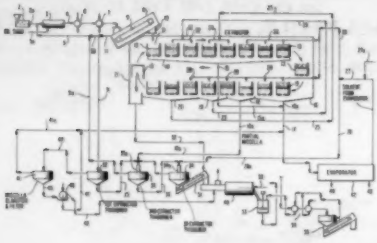
Continuation-in-part of Ser. No. 240,541, Mar. 4, 1981, abandoned, which is a continuation-in-part of Ser. No. 41,769, May 27, 1979, abandoned. This application Dec. 20, 1982, Ser. No. 451,331

Int. Cl.³ C10G 1/04

U.S. Cl. 208—11 LE 3 Claims

1. In a process for the continuous extraction of bitument from oil sand by a hydrocarbon solvent wherein the sand is in the form of discrete particles, and wherein the oil sand is mixed with a miscella recycled from the process to form a slurry and

to dissolve the bitumen, and wherein said discrete particles in the slurry are classified to produce a major coarse fraction and a minor fines fraction, and wherein both fractions are contacted with the solvent to wash miscella therefrom, the improvement wherein:



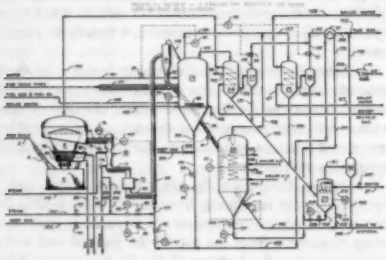
the major coarse fraction is contacted with the solvent by gravity percolation and the classification of the sand in the slurry is effected so as to remove sufficient fine material from the slurry to achieve a flooding rate in said gravity percolation of between 1 and 4 gallons per minute per square foot.

4,448,668

PROCESS FOR RETORTING OIL SHALE WITH MAXIMUM HEAT RECOVERY

Roland F. Deering, Brea, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Dec. 20, 1982, Ser. No. 451,602
Int. Cl.³ C10B *47/00*; C10G *1/02*
U.S. Cl. 208—11 R **28 Claims**



1. A process for recovering heat energy from retorted shale particulates of a size suitable for fluidization, said shale particulates containing combustible materials and being of a size suitable for fluidization, which process comprises:

(1) combusting a substantial proportion of the combustible material contained within said shale particulates in a fluidized bed combustion zone, the particulates being maintained in a fluidizing condition by a first fluidizing gas stream comprising oxygen introduced into said combustion zone at a rate sufficient to fluidize the largest of the particulates introduced therein;

(2) recovering flue gases from said fluidized bed combustion zone and dividing said flue gases into a first and second flue gas stream;

(3) heating a stream of eduction gases used in a retorting zone to retort hydrocarbon-bearing particulates by indirect heat exchange with the first flue gas stream recovered in step (2);

(4) heating water by indirect heat exchange with the second flue gas stream recovered in step (2);

(5) regulating the temperature in said retorting zone by changing the flow rate of said flue gases recovered from step (1) used to heat water in step (4) and correspondingly changing the flow rate of said flue gases in step (3) used to heat said stream of eduction gases;

(6) heating water by indirect heat exchange with shale particulates recovered in step 2 in a fluidized cooling zone, the shale particulates being maintained in a fluidizing condition by a second fluidizing gas stream introduced into said cooling zone at a rate sufficient to fluidize the largest of the particulates contained therein;

(7) recovering heat from gases recovered from said fluidized cooling zone; and

(8) heating said first fluidizing gas stream by heat exchange with residual heat contained in said first and second flue gas streams after recovery thereof from steps (3) and (4).

4,448,669

HYDROCARBON RECOVERY FROM DIATOMITE

James Scinta, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 16, 1983, Ser. No. 475,991
Int. Cl.³ C10G *1/04*
U.S. Cl. 208—11 LE **14 Claims**

1. Process for recovering hydrocarbon values comprising

(a) subjecting a mixture of diatomaceous earth containing hydrocarbons and solvent to supercritical conditions with respect to the solvent,

(b) separating a fluid phase comprising at least a portion of said solvent and some of said hydrocarbon values from a solid phase comprising at least some of the remaining diatomaceous earth.

4,448,670

AROMATIC PITCH PRODUCTION FROM COAL DERIVED DISTILLATE

Ghazi Dickakian, Greenville, S.C., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 346,625, Feb. 8, 1982. This application Jul. 19, 1982, Ser. No. 399,472
Int. Cl.³ C10C *1/00, 1/20, 3/00*
U.S. Cl. 208—22 **16 Claims**

1. A pitch suitable for carbon artifact manufacture, comprising by weight content between 80 and 100 percent toluene insolubles, said pitch having been derived, by heat soaking followed by vacuum stripping, from a substantially deasphaltenated middle fraction of a coal distillate feedstock rich in 3, 4, 5 and 6 polycondensed aromatic rings, and wherein said pitch is further characterized as being relatively free of impurities and ash.

4,448,671

SELECTIVE SORPTION BY ZEOLITES

Ralph M. Dessau, Edison, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

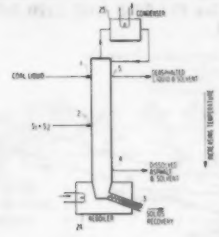
Continuation-in-part of Ser. No. 105,190, Dec. 19, 1979, Pat. No. 4,309,281. This application Sep. 30, 1981, Ser. No. 307,052
Int. Cl.³ C10G *73/02, 25/03*
U.S. Cl. 208—26 **14 Claims**

1. A process for the selective separation of waxy paraffinic compounds comprising straight-chain and branched-chain paraffins from stocks selected from the group consisting of crude oil, heavy oil, distillate oil and lube base oil which comprises contacting the mixture below cracking temperatures with a zeolite having a SiO_2/Al_2O_3 mole ratio of greater than about 12 and a Constraint Index of between about greater than 2 and about 12 to effect the selective sorption of said waxy paraffinic compounds by said zeolite.

4,448,672
PROCESS FOR THE COMBINED DEASHING/DEASPHALTING OF COAL LIQUIDS

Philip J. Angevine, West Deptford; Michael B. Carroll, Mantua; Stuart S. Shih, Cherry Hill, and Samuel A. Tabak, Wenonah, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jun. 4, 1982, Ser. No. 385,159
Int. Cl.³ C10G 21/14
U.S. Cl. 208—86 12 Claims



1. A process for the combined deashing and deasphalting of liquified coal comprising

(a) charging to a vertically oriented deashing/deasphalting column, having a top, an upper portion, a lower portion, a bottom and a feed point a feed comprising a liquified coal containing solids into the upper part of said column;

(b) subjecting said feed within said column to contact with at least a first and a second solvent; and wherein

(i) said second solvent is more polar than said first solvent and

(ii) said second solvent has a boiling point higher than said first solvent within said colunn;

(c) heating said lower portion of said column whereby said lower portion is hotter than said upper portion and wherein the temperature in said lower portion is sufficient to vaporize at least a majority of said first solvent while maintaining at least a majority of said second solvent in liquid phase, whereby said lower portion of said column is relatively deficient in said first solvent and said upper portion of said column is relatively enriched in said first solvent;

(d) removing from the bottom of said column a liquid stream containing a majority of said solids in said feed;

(e) removing from said lower portion at a locus above the bottom of said column, a liquid phase containing a majority of said asphalt and said second solvent;

(f) removing from an upper portion of said column, at a locus below the top of said column, a liquid stream containing a majority of said deasphalted liquid and said first solvent,

(g) withdrawing from the top of said column a vapor stream comprising said first solvent.

4,448,673
AGING RESISTANCE SHAPE SELECTIVE CATALYST WITH ENHANCED ACTIVITY

David S. Shihabi, Pennington, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

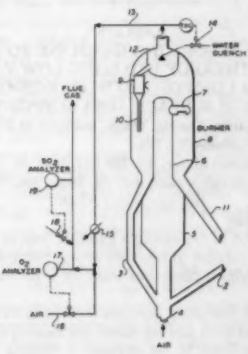
Division of Ser. No. 331,117, Dec. 16, 1981, Pat. No. 4,402,866. This application Sep. 28, 1982, Ser. No. 426,029
Int. Cl.³ C10G 11/05, 47/20
U.S. Cl. 208—111 3 Claims

1. In a process for the catalytic dewaxing of a hydrocarbon fraction under catalytic dewaxing conditions wherein the improvement comprises employing as catalyst for said dewaxing a composition obtained from the process which comprises steaming a precursor crystalline aluminosilicate in the hydrogen or ammonium form having a silica-alumina ratio greater than 12, a constraint index between about 1 and about 12 and an alpha value greater than about 20 in the presence of ammonia to provide a crystalline aluminosilicate having an alpha value of from about 10 to about 150 and thereafter ion-exchanging the steamed precursor with an alkali metal cation under conditions effective to further reduce the alpha value of the crystalline aluminosilicate to less than about 10.

4,448,674
CONTROL OF EMISSIONS IN FCC REGENERATOR FLUE GAS

David B. Bartholic, Watchung, N.J., assignor to Engelhard Corporation, Edison, N.J.

Continuation of Ser. No. 26,011, Apr. 2, 1979, abandoned. This application Mar. 3, 1982, Ser. No. 354,320
Int. Cl.³ C10G 11/04, 11/18
U.S. Cl. 208—113 16 Claims



1. A cyclic process for the catalytic cracking of a sulfur-containing hydrocarbon charge comprising:

(a) cracking a sulfur-containing hydrocarbon charge by contacting it with a cracking catalyst in a cracking zone and at a cracking temperature;

(b) depositing a carbonaceous deposit containing sulfur on the cracking catalyst during step (a);

(c) removing the cracking catalyst having a carbonaceous deposit containing sulfur deposited on it from the cracking zone and introducing it into a regeneration zone;

(d) regenerating the cracking catalyst in the regeneration zone by contacting the catalyst with air at a temperature of at least about 1100° F. to burn the carbonaceous residue off the catalyst and thereby produce regenerated catalyst and flue gas comprising oxides of sulfur;

(e) removing the flue gas and the regenerated catalyst from the regeneration zone;

(f) returning the regenerated catalyst to the cracking zone;

(g) cooling the flue gas to a temperature at least about 100° F. below its temperature in the regeneration zone;

(h) adding to the cooled flue gas a particulate solid from a source separate from the cracking catalyst, said particulate solid comprising a metal compound;

(i) in the presence of oxygen, suspending the particulate solid in the cooled flue gas to reduce the quantity of oxides of sulfur in the flue gas by chemical reaction.

4,448,675

SILICO-CRYSTAL ZSM-48 METHOD OF PREPARING SAME AND CATALYTIC CONVERSION THEREWITH

Pochen Chu, West Deptford, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 303,276, Sep. 17, 1981, Pat. No. 4,397,827, and a continuation-in-part of Ser. No. 56,754, Jul. 12, 1979, abandoned. This application Apr. 14, 1983, Ser. No. 484,748

Int. Cl.³ C10G *11/05, 45/64, 45/12, 45/54*

U.S. Cl. 208—118 3 Claims

1. A process for effecting catalytic conversion of an organic charge which comprises contacting said charge under catalytic conversion conditions with a catalyst comprising the porous silico-crystal ZSM-48 having a composition expressed in terms of moles of anhydrous oxides, per 100 moles of silica, as follows:

$$(0.5 \text{ to } 5)N_2O:(0.1 \text{ to } 10)M_{2/x}O:(0 \text{ to } 4)Al_2O_3:(100)SiO_2$$

wherein M is at least one cation having a valence n, N is a mixture of a C_2–C_{12} alkylamine compound and tetramethylammonium compound, and wherein said crystal is characterized by the X-ray diffraction pattern whose values are set forth in Table I of the specification and which exhibits a singlet line within the range of 11.8 0.2 Angstrom units.

4,448,676

METHOD OF REFORMING GASOLINE TO RAISE THE OCTANE THEREOF UTILIZING LOW VALENCE CHROMIUM COMPOSITED WITH NON-OXIDIZING HIGH SURFACE AREA SUPPORT

William K. T. Gleim, Seattle, Wash., assignor to Energy Modification, Inc., Gainesville, Fla.

Continuation-in-part of Ser. No. 335,447, Dec. 29, 1981, Pat. No. 4,394,252. This application Jul. 18, 1983, Ser. No. 514,603

Int. Cl.³ C10G *35/06*

U.S. Cl. 208—136 6 Claims

1. In a method of reforming a gasoline feed in the presence of a reforming catalyst to raise the octane number thereof, the improvement which comprises utilizing a reforming catalyst comprising:

(a) chromium present in divalent form or in an admixture of the divalent form and the metal, the ratio of the chromium in divalent form to the chromium present as the metal being at least 1:1; and

(b) a non-oxygen containing high surface area support for said chromium which will not oxidize said catalytic component at reforming conditions to a valence state higher than the divalent valence state.

4,448,677

CATALYST AND PROCESS FOR RESIDUA DEMETALATION AND DESULFURIZATION

Stephen M. Oleck, Moorestown, and Howard S. Sherry, Cherry Hill, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 42,659, May 25, 1979, abandoned, which is a continuation-in-part of Ser. No. 714,145, Aug. 13, 1976, abandoned. This application Aug. 3, 1982, Ser. No. 404,786

Int. Cl.³ C10G *45/04*

U.S. Cl. 208—216 PP 7 Claims

1. A process for treating a residual hydrocarbon oil to reduce the metal or sulfur content thereof which comprises contacting said oil with hydrogen at a hydrogen pressure of about 500 to 3000 psig, a hydrogen circulation rate of about 1000 to 15,000 scf/bbl. of feed, a temperature of about 600 to 850° F., a space velocity of 0.1 to 5.0 LHSV; and in the presence of a catalyst comprising a hydrogenating component which comprises the oxides or sulfides of a Group VI-B metal and a Group VIII metal on an alumina support comprising gamma phase alumina, said catalyst having at least 25% of its pore volume in pores of 0–30 Å diameter, at least 50% of its pore volume in pores of 0–100Å diameter, at least 90% of its pore volume in pores 0–200 Å diameter, and not more than 10% of its pore volume in pores greater than 200 Å diameter.

4,448,678

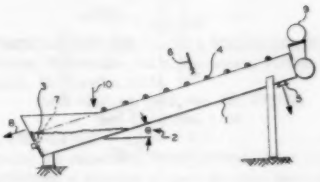
APPARATUS AND METHOD FOR BENEFICIATION OF LIGNITE

Cecil C. Gentry, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 2, 1982, Ser. No. 364,585

Int. Cl.³ B03B *1/00*; C22B *3/02*

U.S. Cl. 209—3 3 Claims



1. A method for beneficiating crushed lignite which comprises (1) feeding the same into a locus in a lower-end portion of a conveying-fracturing-washing zone disposed in an upwardly inclined direction and (2) conveying crushed lignite in said zone from the lower-most end of a quiescent section provided therein to the upper discharge end of said zone using a conveying means having two portions: (a) the portion of said conveying means extending within the quiescent section having a configuration to convey the lignite therefrom without causing turbulence of the supernatant liquid therein and (b) the portion of said conveying means extending through the remaining portion of said zone having a configuration to accomplish conveying, fracturing, and intimate mixing of the lignite with a washing medium to convey washed lignite up to a discharge at the upper end of said zone.

4,448,679

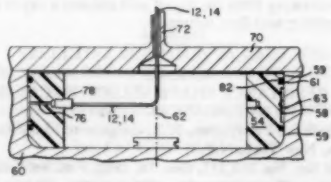
APPARATUS AND METHOD FOR SEDIMENTATION FIELD FLOW FRACTIONATION

Charles H. Dilks, Jr., Newark; Joseph J. Kirkland, and Wallace W. Yau, both of Wilmington, all of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 30, 1981, Ser. No. 326,156

Int. Cl.³ B03B *5/62*

U.S. Cl. 209—155 13 Claims



9. A method for separating particulates suspended in a fluid medium according to their effective masses by the steps of:

flowing the fluid medium through an annular channel having an annulus axis and defined by the interfacial gap between the outer surface of an inner ring and an inner surface of an outer ring,

covering the inner ring with a liquid, and

rotating the channel and liquid together about the axis.

4,448,680

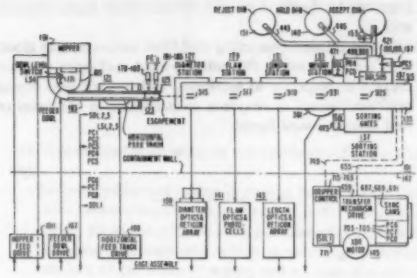
APPARATUS AND METHOD FOR CLASSIFYING FUEL PELLETS FOR NUCLEAR REACTOR

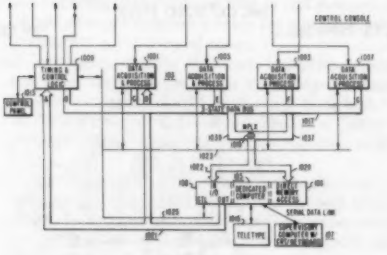
Robert S. Wilks, Plum Borough; Eliezer Sternheim, Pittsburgh; Gerald A. Breakey, Penn Township, Allegheny County; Robert H. Sturges, Jr., Plum Borough; Alexander Taleff, Churchill Borough, and Raymond P. Castner, Monroeville, all of Pa., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 22, 1980, Ser. No. 171,606

Int. Cl.³ B07C *1/10, 5/16, 5/344*

U.S. Cl. 209—564 35 Claims





1. Apparatus for measuring the diameter of a fuel pellet for a nuclear reactor, including a diameter station in which said pellet is positioned for measurement, means for projecting a beam of light on said pellet, a rotatable prism interposed in said beam for causing said beam to scan elemental areas of said pellet, said prism having a plurality of faces, means connected to said prism to rotate said prism so as to scan said elemental areas of said pellet, the deflection of said beam by each said face in its turn interposed in the path of said beam, as said prism is rotated, causing said beam to scan elemental area lengthwise across said pellet, means responsive to the rotation of said prism for producing a pulse corresponding to each face of said prism as said prism is interposed in the path of said beam, the said pulse-producing means also including means for producing an additional pulse for identifying a starting face of said prism interposed in the path of said beam whereby faces interposed in the path of said beam in succession after said starting face may be identified with reference to said starting face, and means cooperative with the pulses produced by said pulse-producing means for assigning a unique scan-word address to each elemental area of said pellet scanned by rotation of successive faces of said prism.

4,448,681

FLOATATION ARRANGEMENT

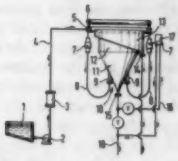
Hans Lüdke, Essen-Bredeney; Albert Bahr, Clausthal-Zellerfeld; Friedrich-Wilhelm Mehrhoff, Gladbeck, and Karl Legner, Herten-Bertlich, all of Fed. Rep. of Germany, assignors to Bergwerksverband GmbH and Ruhrkohle AG, both of Essen, Fed. Rep. of Germany

Filed Sep. 2, 1981, Ser. No. 298,754

Claims priority, application Fed. Rep. of Germany, Mar. 24, 1981, 3111506

Int. Cl.³ C02F *1/24;* B03D *1/00*

U.S. Cl. 210—97 7 Claims



1. An arrangement for floatation of solid particles from liquids such as from sewage, particularly for separating of coal from a conditioned pulp, the arrangement comprising conditioning means from which a pulp flows in a predetermined direction; a pulp supplying conduit extending from said conditioning means; gasifying means having a gasifying surface extending parallel to the pulp flow direction and provided with a bubble generator; a gas supplying conduit; and separating means having substantially upright conical container for foam formation and a level controlling element, arranged laterally of said separator means for adjusting the level of the pulp in said separating means said gasifying means including a plurality of gasifying devices arranged in a ring-shaped manner around said conical container and each connected with said pulp supplying and gas supplying conduits so that when the pulp is supplied from said conditioning means via said pulp supplying conduit and said gas is supplied via said gas supplying conduit into each of said gasifying devices solid particles of the pulp adhere to gas bubbles produced in said gasifying devices and thus-formed gas bubbles-solid particles complexes are supplied into said separating means, said bubble generator of each of said gasifying devices is formed of at least one pipe composed of an elastic and porous synthetic plastic material, extending transversely to the flow direction of the pulp.

4,448,682

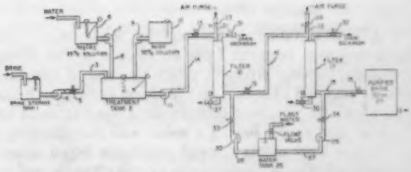
PRODUCTION OF PURIFIED BRINE

George J. Moritz, Clarks Summit, Pa., assignor to Akzona, Incorporated, Asheville, N.C.

Division of Ser. No. 176,686, Aug. 8, 1980, Pat. No. 4,336,232, which is a continuation of Ser. No. 896,379, Apr. 14, 1978, abandoned. This application Feb. 18, 1982, Ser. No. 349,811

Int. Cl.³ B01D *21/01;* C02B *1/20*

U.S. Cl. 210—101 11 Claims



1. An apparatus for effecting purification of salt brine containing calcium and magnesium ions which comprises a treatment tank for containing a predetermined amount of salt brine to be purified, a solution of soda ash in a predetermined con-

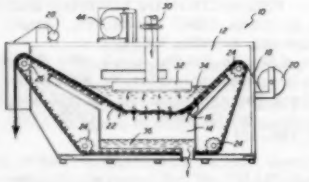
centration in one container, a solution of caustic soda of predetermined concentration in another container, and feed control means for introducing metered amounts of the contents of each of said containers, in succession, into the treatment tank and being capable of controlling the successive introduction of the soda ash and the caustic soda to form a readily filterable floc precipitate containing calcium and magnesium within a period of not more than two hours after the introduction of the soda ash into said saturated salt brine, filtering means for filtering the floc precipitate and treated brine, conduit means for directly conveying the admixture of floc precipitate and treated brine from the treatment tank to said filtering means, means for passing the filtered treated brine from the filtering means to a purified brine storage unit; the feed control means including flow control means operatively associated with said containers for controlling the metered amounts of the contents of each of the containers introduced into the treatment tank depending upon the combined magnesium and calcium hardness of the salt brine, said feed control means initially actuating the flow control means operatively associated with said one container to introduce the solution of soda ash into said treatment tank and after formation of and floculation of a first precipitate containing calcium carbonate in said treatment tank, said feed control means actuating the flow control means operatively associated with said another container to introduce said caustic soda into said treatment tank to form a second precipitate containing magnesium hydroxide whereby from 0.6 g/l to 1.0 g/l of the soda ash is first introduced in excess of stoichiometric proportions to said salt brine and is allowed to react with the salt brine and then from 1.0 g/l to 2.0 g/l of the caustic soda is introduced in excess of stoichiometric proportions to said salt brine, and discharge control means for controlling the discharge of treated brine from said treatment tank; after formation of said readily filterable floc precipitate containing calcium and magnesium, said discharge control means discharging the treated brine from the treatment tank into the conduit means for directly conveying the treated brine to said filter means.

4,448,683

LIQUID FILTRATION SYSTEM WITH LEVEL-RESPONSIVE CONTAMINANT REMOVAL AND AIR FLOW CONTROL FOR VACUUM PRODUCER

James F. Green, Pompey, N.Y., assignor to Filtertech Inc., Manlius, N.Y.

Filed Sep. 30, 1982, Ser. No. 429,386
Int. Cl.³ B01D *29/02*
U.S. Cl. 210—106 **13 Claims**



1. A liquid filtration system including apparatus for limiting the horsepower required from an electric motor driving a centrifugal vacuum producer which operates to evacuate air from an enclosed chamber, said filtration system comprising:

(a) a tank for receiving contaminated liquid from an industrial process and having a lower wall incorporating permeable filter media through which the liquid passes for removal of solid contaminants by collecting thereof on the upper surface of the media;

(b) means for removing said contaminants from said media surface;

(c) an enclosed chamber below said tank for receiving filtered liquid passing through said media with an air space above;

(d) a centrifugal vacuum producer positioned in a line communicating with said air space and operable to evacuate air therefrom to produce a sub-atmospheric pressure within said enclosed chamber;

(e) an electric motor operatively connected to said vacuum producer;

(f) a throttling valve interposed in said line between said air space and said vacuum producer and movable between open and closed positions to control the rate at which air is evacuated by said vacuum producer, and thereby the horsepower required from said electric motor;

(g) float means positioned in said tank for movement in response to the level of said contaminated liquid therein; and

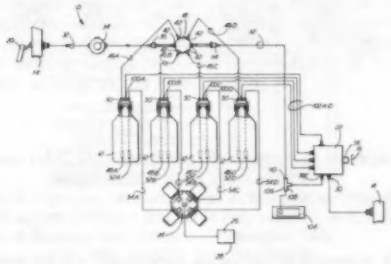
(h) linkage means connecting said float means to said throttling valve to move the latter toward said open position thereof in response to increases, and toward said closed position thereof in response to decreases in the level of said contaminated liquid.

4,448,684

SOLVENT PRESSURIZATION SYSTEM

Roland C. Paradis, Newtown, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Jan. 28, 1983, Ser. No. 461,789
Int. Cl.³ B01D *15/08*
U.S. Cl. 210—198.2 **15 Claims**



1. A solvent pressurization system for use in liquid chromatography; said system comprising:

a source of pressurized gas;

a plurality of sealed vessels, said vessels being adapted to hold solvents therein; each said vessel having a gas input port, said vessels being located within a closable cabinet;

means for simultaneously communicating said pressurized gas from said gas source to each one of said plurality of sealed vessels such that the pressure within each said vessel is substantially equal to the pressure within every other said vessel;

means for regulating the pressure to said vessels;

means for relieving said pressure from said vessels when said cabinet is opened;

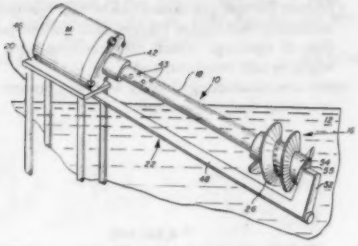
means for depressurizing said vessels when said pressure within said vessels exceeds a preselected venting pressure; and

means for equilibrating the pressurized gas when said pressure exceeds the regulated pressure but remains less than said preselected venting pressure.

4,448,685
AERATING APPARATUS UTILIZING ROTATING IMPELLER VANE

Frank Malina, 2832 S. Harding Ave., Chicago, Ill. 60629

Filed Nov. 28, 1980, Ser. No. 211,305
Int. Cl.³ B01F 3/04
U.S. Cl. 210—219 7 Claims



1. Apparatus for aerating an unclean body of water comprising:

a hollow cylindrical casing including means for rotation at a substantially high speed, one end of said cylindrical casing being provided with an enlarged diameter portion having a cylindrical wall and which is submerged beneath the surface of the body of water, and an opposite end of said cylindrical casing disposed above the surface of the body of water,

said cylindrical wall being formed with a plurality of air outlet openings arranged therein in a helical row,

water impelling vane means secured to said cylindrical wall of said enlarged diameter portion for submersion beneath the surface of the body of water,

said vane means comprise at least one helical blade including one helix turn and having its inner edge continuously secured to said cylindrical wall along helix lines which follow the contour of said helical row of air outlet openings and which is spaced from such row by a slight distance,

said at least one helical blade being inclined throughout its entire length toward the opposite end of said cylindrical casing, at an acute angle with respect to the normal to the longitudinal axis of said cylindrical casing, and overlapping said row of air outlet openings,

the inner edge of said at least one helical blade having a diameter equal to the outside diameter of said cylindrical wall of said enlarged diameter portion, and the outer edge of said at least one helical blade having throughout its entire length the same outside diameter thereof, and

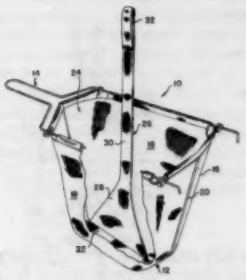
air inlet means disposed at the opposite end of said cylindrical casing for admitting air to the interior of said cylindrical casing for subsequent discharge through said air outlet openings.

4,448,686
FILTER BAG WITH INTEGRAL AGITATOR

Bernard Friedman, Allentown, Pa., assignor to Oil Process Systems, Inc., Allentown, Pa.

Filed Nov. 4, 1982, Ser. No. 439,194
Int. Cl.³ B01D 33/00, 35/00
U.S. Cl. 210—238 12 Claims

1. A filter bag, comprising a porous flexible body having a closed end and an open end, agitating means positioned within said filter bag and formed integrally therewith for agitating liquid being filtered by said filter bag, and attaching means for attaching said agitating means directly to said closed end of said filter bag such that the movement of said agitating means causes a corresponding movement of said closed end of said filter bag body, whereby said agitating means inhibits particu-



lar matter collected within said filter bag during a filtering operation from clogging said filter bag.

4,448,687
PROCESS FOR THE PRODUCTION OF SEMIPERMEABLE POLYBENZIMIDAZOLE MEMBRANES WITH LOW TEMPERATURE ANNEALING

Donald G. J. Wang, Tamshui, Taiwan, assignor to Celanese Corporation, New York, N.Y.

Filed Dec. 17, 1982, Ser. No. 450,717
Int. Cl.³ B29D 27/00
U.S. Cl. 210—500.2 41 Claims

1. In a process for the production of a semipermeable polybenzimidazole membrane wherein a film or hollow filament is formed from a solution of a polybenzimidazole polymer and subsequently subjected to an annealing step at elevated temperatures in the presence of an annealing medium, the improvement comprising conducting said annealing step at a temperature below the boiling point of water in the presence of an aqueous annealing medium comprised of a solvent for said polymer.

11. A semipermeable membrane produced in accordance with the process of claim 1.

4,448,688
COUNTER FLOW SEPARATOR

Jerome F. Havlis, 223 N. Aldine, Park Ridge, Ill. 60068

Filed Jun. 20, 1983, Ser. No. 505,795
Int. Cl.³ B01D 21/26
U.S. Cl. 210—512.3 14 Claims

1. In a counter flow separator for removing solid particles from liquid compositions, the combination of:

(a) a vertically disposed stationary housing having a cylindrical side wall and outwardly vaulted upper and lower end walls;

(b) said end walls presenting axially aligned openings and journal means for rotatably mounting axially aligned turbine shafts;

(c) said housing presenting inwardly adjacent said cylindrical side wall a generally laterally disposed helical surface extending between said end walls;

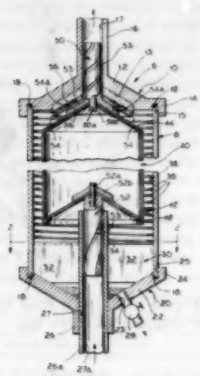
(d) said housing presenting in said lower end wall means for removing solids from said housing and presenting in said upper end wall means for removing purified liquid;

(e) a turbine mounted for rotation within said housing and including:

(i) a hollow body having a cylindrical side wall with an outer diameter slightly less than the inner diameter of said housing helical surface and having upwardly vaulted top and bottom walls;

(ii) shaft means extending from opposite ends of said body through said housing openings and journal means;

(iii) said shaft means including a cylindrical shaft having therein at least one spiral groove which extends from a free end of said shaft to the interior of said housing to



permit liquid to enter and leave said housing whereby the hydraulic pressure of said liquid causes said turbine to rotate and force liquid in said housing to the side wall thereof.

4,448,689

APPARATUS FOR FINAL CLEARING OF WASTE WATER

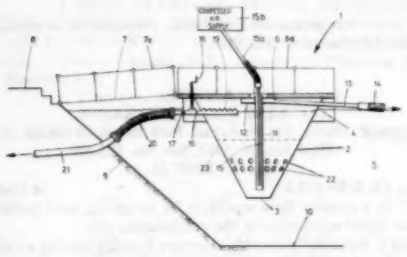
Reinhart von Nordenskjöld, Am Jagdweg 6, D-8011 Solalinden, Fed. Rep. of Germany

Filed Aug. 17, 1981, Ser. No. 293,440

Claims priority, application Fed. Rep. of Germany, Aug. 20, 1980, 3031412

Int. Cl.³ B01D *43/00*

U.S. Cl. 210—521 **14 Claims**



1. An apparatus for separating cleared water from sludge-containing water, comprising:

a basin having wall means defining therein a chamber for separating cleared water from sludge;

means for supporting said basin in a reservoir of sludge-containing waste water;

outlet means for receiving the cleared water from the upper region of said chamber, said outlet means including a flow control edge positioned at an elevation below the surface level of the waste water in the reservoir for maintaining the surface level of the cleared water in the basin at an elevation lower than that of said waste water surface level;

opening means in the wall means of said basin at a location spaced upwardly a substantial distance above the bottom of the basin for permitting flow of waste water from the reservoir through the opening means into the chamber due to the surface level of cleared water in the basin being lower than the surface level of waste water in the reservoir, said opening means providing the sole communication between said reservoir and said chamber;

said basin having a vertically elongated tapering wall portion which projects upwardly from said opening means, and is of a diverging tapered configuration as said side wall portion projects upwardly said basin also having a bottom portion positioned below said opening means for collecting said sludge therein, said bottom portion being free of openings which communicate with said waste water in said reservoir; and

means communicating directly with said bottom portion for removing sludge therefrom.

4,448,690

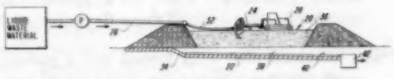
SUBSURFACE WASTE DISPOSAL SYSTEM

Sam W. Maphis, Boulder, Colo., assignor to Genstar Waste Transfer, Inc., San Mateo, Calif.

Filed Sep. 14, 1981, Ser. No. 301,970

Int. Cl.³ C02F *3/04;* **B09B** *1/00*

U.S. Cl. 210—609 **22 Claims**



13. The method of sludge treatment with decomposition of the solids portion thereof, comprising:

(a) providing a bed of granular media including a first, aerobic layer of relatively fine media consisting essentially of media having an effective grain size (D_{10}) approximately in the range of 0.35 mm. to 0.50 mm. and a clay content less than 0.002 mm of not more than substantially 3% capable of retaining and aerobically decomposing solids from an injected liquid sludge having a solids content of at least one percent, while permitting effluent from the sludge to percolate therethrough at a rate in excess of two inches per hour under conditions equivalent to an approximate annual hydraulic bed loading of at least fifty-four inches, and a second layer of relatively coarser media than said first layer, located below the first layer, capable of permitting percolation of effluent at a relatively greater rate than the first layer;

(b) providing an underdrain system located below said first layer and in communication with said second layer for receiving sludge effluent percolated through the first layer and removing effluent from the bed;

(c) providing a mobile subsurface injector means for injecting liquid sludge having a solids content of at least one percent into a subsurface, aerobic portion of the first layer while moving therethrough and restructuring the first layer to prevent formation of a continuous layer of injected sludge;

(d) supplying liquid sludge having a solids content of at least one percent to said injector means while simultaneously moving the injector means through the aerobic portion of the first layer and restructuring the first layer to prevent formation of a continuous layer of injected sludge;

(e) substantially retaining the solids content of the liquid sludge within said first layer and subjecting said retained solids to aerobic decomposition; and

(f) collecting percolated effluent in said underdrain system and removing the effluent from the bed.

4,448,691

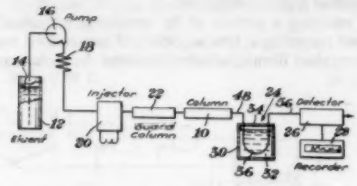
LIQUID CHROMATOGRAPHIC METHOD AND APPARATUS WITH HOLLOW FIBER DEVICE FOR POST-COLUMN DERIVATIZATION

James C. Davis, East Lansing, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 276,110, Jun. 22, 1981, abandoned, which is a continuation of Ser. No. 183,527, Sep. 2, 1980, abandoned. This application Feb. 14, 1983, Ser. No. 465,977

Int. Cl.³ B01D *15/08*

U.S. Cl. 210—656 **6 Claims**



4. Method of analyzing samples by liquid chromatography comprising adding sample to a chromatographic column means, adding eluent to the chromatographic column means effective to chromatographically displace species of the sample from the chromatographic column means, whereby chromatographically displaced sample species appear ultimately in the effluent of the chromatographic column means, the improvement which comprises feeding the effluent of the chromatographic column means through the internal bore of a hollow fiber membrane, ultimately to a liquid chromatographic detector, and prior to detection, using the hollow fiber membrane for permeation transfer of a mobile reagent into the effluent of the chromatographic column means to enhance the sensitivity of detection of the method.

4,448,692

LIQUID CHROMATOGRAPH

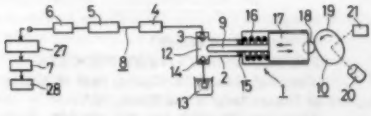
Akira Nakamoto, Takatsuki, and Katsuhiko Saito, Otsu, both of Japan, assignors to Shimadzu Corporation, Kyoto, Japan

Filed Feb. 28, 1983, Ser. No. 470,553

Claims priority, application Japan, Feb. 27, 1982, 57-31411; Jun. 29, 1982, 57-98345[U]

Int. Cl.³ B01D *15/08*

U.S. Cl. 210—656 **9 Claims**



1. In a liquid chromatography system comprising a reciprocating single plunger pump provided with a pump chamber communicating through an inlet valve with a solvent reservoir and through an outlet valve with a solvent supply passage, said solvent supply passage communicating with a chromatographic column and a detector; and a drive means for moving said plunger through suction and delivery strokes whereby solvent is drawn into said pump chamber from said solvent reservoir and discharged into said solvent supply passage, said drive means being adapted to provide a set velocity to said suction stroke greater than the set velocity of said delivery stroke, the improvement for controlling the velocity stroke of said pump plunger so as to compensate for the compressibility of the solvent thereby minimizing pulsating of the solvent within the chromatography system, which comprises a delivery stroke velocity control system including a pressure detecting means disposed in said solvent supply passage for measuring pump outlet solvent pressure; memory means for receiving and storing a pressure signal provided by said pressure detecting means at a predetermined point during the suction stroke of said pump plunger; comparator means associated with said memory means for measuring the pressure differential between said stored pressure signal and an outlet solvent pressure signal measured by said pressure detecting means at the initiation of the subsequent delivery stroke of said pump plunger; means for increasing the velocity of said delivery stroke in response to said pressure differential to an adjusted velocity between the set velocities of said suction and delivery strokes; means for maintaining said adjusted velocity until the outlet pressure in said solvent supply passage corresponds to said stored pressure signal; and means for establishing and maintaining the set delivery velocity for the remainder of the delivery stroke.

4,448,693

METHOD FOR PARTIALLY DESALINATING WATER WITH A WEAKLY ACID AND STRONGLY BASIC ION EXCHANGER MATERIALS AND SUBSEQUENTLY REGENERATING THE ION EXCHANGER MATERIALS

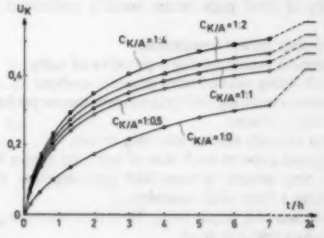
Brigitte Kiehling, Karlsruhe, and Wolfgang Höll, Ettlingen, both of Fed. Rep. of Germany, assignors to Kernforschungszentrum Karlsruhe GmbH, Karlsruhe, Fed. Rep. of Germany

Filed Jan. 28, 1982, Ser. No. 344,072

Claims priority, application Fed. Rep. of Germany, Jan. 28, 1981; European Pat. Off., Nov. 24, 1981, 81109498

Int. Cl.³ B01J *49/00*

U.S. Cl. 210—673 **16 Claims**



1. Method for partially desalinating water by a combination of a weakly acid cation exchanger material present in aqueous suspension in the free acid form and a basic anion exchanger material present in aqueous suspension in hydrogen carbonate form, and subsequently regenerating the charged ion exchanger materials, comprising:

(a) effecting the partial desalination with a weakly acid cation exchanger and an anion exchanger which are in two beds with the anion exchanger being in the first bed and the cation exchanger being in the second bed, to remove neutral salt cations and neutral salt anions from the water, and

(b) regenerating both exchangers together exclusively by adding CO_2, which forms carbonic acid as a regenerating agent, to hydrogen carbonate form for the anion exchanger and free acid for the weakly acid cation exchanger, by flowing the regnerating agent in succession through the first and second beds and then recycling the regenerating agent to the first bed.

4,448,694

METAL EXTRACTION FROM SOLUTION AND IMMOBILIZED CHELATING AGENTS USED THEREFOR

Edwin P. Plueddemann, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Sep. 4, 1981, Ser. No. 299,416

Int. Cl.³ B01D *15/04;* **C02F** *1/42;* **C08L** *83/06;* **C07F** *7/10*

U.S. Cl. 210—682 **22 Claims**

1. A method for preparing an immobilized chelating agent

which comprises treating an inorganic solid substrate with a silylating agent which is a compound of the formula $(RO)_3SiQNH(CH_2CH_2NH)_xQSi(OR)_3$ where x has a value of 2, 3, or 4, R is a methyl, ethyl, propyl or butyl radical and Q is propylene or butylene.

2. The product produced by the method of claim 1.

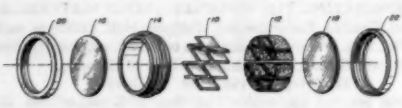
3. A method of removing heavy metal ions from solution which method comprises contacting a solution containing heavy metal ions with a silylated substrate of claim 2.

4,448,695

EFFLUENT WATER FILTER DEVICE AND METHOD

Edward C. Gordon, Jr., and Glen D. Gordon, both of 7475 SW. Cherry St., Tigard, Oreg. 97221

Filed Feb. 19, 1982, Ser. No. 350,373
Int. Cl.³ B01D *23/14*
U.S. Cl. 210—694 **7 Claims**



1. An effluent filtering system comprising:

a pipe section;

a plurality of filter pack means serially positioned in said pipe;

said filter pack means comprising;

grid support means having a plurality of cells;

said cells being packed with granular carbon;

ring means receiving said grid support means packed with granular carbon;

a screen on each side of said ring means;

locking end caps on each side of said ring means locking said ring means, screens and grid together thereby forming a filter pack assembly;

said grid and ring means being formed of bacterial growth retarding stainless steel;

securing means securing said plurality of filter pack means in said pipe section;

connecting means for connecting said pipe section with said plurality of filter pack means in an effluent pipe whereby effluent is caused to flow through said series of filter pack means.

4,448,696

PROCESS FOR RECOVERING AND RECYCLING COAGULANT PRESENT IN WATER TREATMENT SLUDGES

A. R. White, Jr., Matthews, N.C., assignor to U.S. Environmental Products, Inc., Boca Raton, Fla.

Filed Feb. 23, 1982, Ser. No. 351,503
Int. Cl.³ C02F *1/52, 11/14*
U.S. Cl. 210—711 **21 Claims**

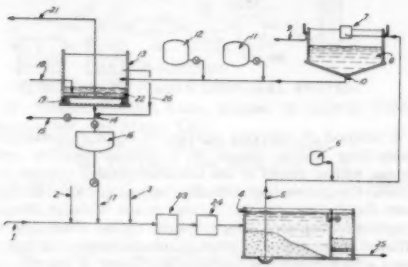
1. An improved raw water treatment process of the type involving mixing an aluminum or iron coagulant and an alkaline agent with untreated raw water to effect flocculation of solids in the water and formation of a sludge containing the hydroxide form of the coagulant, separating the coagulant containing sludge from the water, and concentrating and dewatering the sludge, wherein the improvement comprises:

(a) adding acid to the sludge sufficient to lower the pH of the sludge to about 3.9 or less and to convert an amount of the hydroxide form of the coagulant to an acid soluble form, resulting in an acidulated sludge comprising a liquid component containing the acid soluble form of the coagulant and acid soluble impurities, and a solids component containing unsolubilized hydroxide form of the coagulant and other suspended matter;

(b) introducing the acidulated sludge onto the surface of a non-mechanical substantially horizontal filtering medium;

(c) filtering the liquid component through the solids component on the filtering medium yielding a recovered coagulant filtrate comprising (i) a recovered soluble form of the coagulant that is a more efficient coagulant, on a mole basis, than the commercially available coagulant and (ii) some acid soluble impurities; and leaving on the surface of the nonmechanical substantially horizontal filtering medium a solids cake comprising unsolubilized hydroxide form of the coagulant, other suspended matter, and entrained liquid component;

(d) retaining a portion of the recovered coagulant filtrate and recycling at least a portion of the retained recovered coagulant filtrate, which is less than the molar equivalent



of the commercially available coagulant which would otherwise be required, to effect flocculation of solids in untreated raw water; and

(e) discarding an amount of the recovered coagulant filtrate sufficient to ensure that the concentration of acid soluble impurities recovered along with the acid soluble form of the coagulant does not exceed an acceptable maximum contaminant level for the water treated with the recycled recovered coagulant filtrate;

the amount of the hydroxide form of the coagulant that is converted to an acid soluble form being equal to or less than the amount necessary to ensure that the concentration of acid soluble impurities in the recycled recovered coagulant filtrate does not exceed the acceptable maximum contaminant level for the water treated with the recycled recovered coagulant filtrate.

4,448,697

SECONDARY RECOVERY PROCESS

David R. McCoy, and Robert M. Gipson, both of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jan. 22, 1982, Ser. No. 341,962
Int. Cl.³ E21B *43/22;* C09K *3/00*
U.S. Cl. 252—8.55 D **10 Claims**

1. A process for recovering hydrocarbons from a subterranean hydrocarbon-bearing formation penetrated by an injection well and a production well which comprises:

(A) injecting into the formation via an injection well an aqueous drive fluid comprising water or brine containing therein:

(a) from about 0.05 to about 6.0 weight percent of a nonionic surfactant of the formula:

$$RO(R'O)_m(CH_2CH_2O)_nH$$

wherein R is selected from the group consisting of an alkyl of 1 to 6 carbon atoms, phenyl and tolyl; R′ is a 1,2- or 2,3-butylene radical; m is an integer from 1 to 40 and n is an integer of 10 or greater such that the resulting surfactant contains not less than 50 weight percent of oxyethylene units, and

(b) from about 0.03 to about 5 weight percent of an anionic sulfate or sulfonate surfactant,

(B) forcing the said fluid through the formation, and

(c) recovering hydrocarbons through the production well.

4,448,698

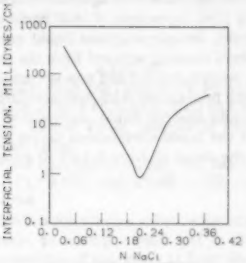
SELECTING SALINITIES IN MICELLAR FLOODING

Scott P. Trushenski, Broken Arrow, Okla., assignor to Standard Oil Company, Chicago, Ill.

Filed Aug. 30, 1978, Ser. No. 938,131

Int. Cl.³ C09K *3/00*

U.S. Cl. 252—8.55 D **14 Claims**



1. A method of displacing crude oil through an oil-bearing subterranean reservoir containing aqueous formation fluid, which comprises:

injecting into the reservoir an aqueous displacement fluid comprising micellar fluid and aqueous polymer-containing fluid with the micellar fluid in immediate contact with the aqueous formation fluid and the polymer-containing fluid in immediate contact with the micellar fluid, said displacement fluid having a composition such that the interfacial tension between said displacement fluid and said crude oil will change and will decrease and then increase as said displacement fluid mixes with the aqueous formation fluid, and

displacing said displacement fluid through at least a portion of the reservoir to displace crude oil.

5. In a method of displacing crude oil through an oil-bearing subterranean reservoir containing saline aqueous formation fluid, wherein the reservoir is penetrated by at least one injection well which is in fluid communication through the reservoir with at least one production well penetrating the reservoir, which includes the step of injecting into the reservoir through said at least one injection well an aqueous formation fluid comprising micellar fluid and aqueous polymer-containing fluid with the micellar fluid in immediate contact with the aqueous formation fluid and the aqueous polymer-containing fluid in immediate contact with the micellar fluid, said aqueous fluid having a different salinity from the salinity of the aqueous formation fluid and the step of displacing said injected fluid through at least a portion of the reservoir to displace crude oil toward said at least one production well under conditions such that the aqueous formation fluid mixes with said injected fluid, the improvement comprising:

selecting the salinity of said injected fluid such that as the injected fluid mixes with aqueous formation fluid, the salinity of the resulting mixtures and the interfacial tension between said mixtures and displaced crude oil change and said interfacial tension passes through a minimum interfacial tension as shown on FIG. 1.

4,448,699

LAUNDRY ADDITIVE PRODUCTS CONTAINING AMINO-SILANES

Christian R. Barrat; John R. Walker, both of Brussels, and Jean Wevers, Strombeek-Bever, all of Belgium, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Sep. 22, 1982, Ser. No. 421,186

Claims priority, application United Kingdom, Sep. 25, 1981, 8129068; Nov. 27, 1981, 8135945

Int. Cl.³ D06M *13/38*; C11D *7/32*

U.S. Cl. 252—8.75 **11 Claims**

1. A laundry additive product for inhibiting or preventing the corrosion of enamelled surfaces characterised in that it comprises a composition comprising an amino-silane having the formula

$$(R_1O)_{3-x}-\underset{\displaystyle(R_1)_x}{\overset{|}{Si}}-(CH_2)_m-N(R_3)_2$$

where

R_1 is C_{1-4} alkyl or C_{1-4} hydroxyalkyl

x is 0 or 1

m is 1–6

each R_3 is H, R, C_{1-6} alkylamine or

$$-\left[(CH_2)_n-\underset{\displaystyle R_4}{\overset{|}{N}}\right]_y-R_5$$

where

R_4 is H or R_1

n is 1–6

y is 0–6

R_5 is R_4,

$$(CH_2)_p\underset{\displaystyle O}{\overset{\|}{C}}-OR_1 \text{ or } -\underset{\displaystyle O}{\overset{\|}{C}}-NHR_4;$$

p is 1–6,

the composition being impregnated in and/or coated on a flexible non particulate substrate, in a weight ratio of amino-silane to substrate of from 1:5,000 to 1:1.

4,448,700

LUBRICATING COMPOSITION AND METHOD OF MAKING SAME

Herman Lankamp, Odijk, Netherlands, assignor to SKF Industrial Trading and Development Co., B.V., Nieuwegein, Netherlands

Continuation-in-part of Ser. No. 95,573, Nov. 19, 1979, abandoned. This application Jun. 1, 1982, Ser. No. 383,585

Claims priority, application Netherlands, Jun. 12, 1978, 7811913

Int. Cl.³ C10M *7/14*, *7/24*

U.S. Cl. 252—12.4 **20 Claims**

1. A solid self lubricating bearing component comprised of a composition of finite thickness having self oil-releasing properties, said composition comprising polypropylene in an amount of from 12–60% by weight, having a melt index below 1.0, and 88–40% by weight of one or more synthetic ester oils, at least half of the oil consisting of neopentylpolyolesters having an average chain length of the acid function groups between 5–7, the other part of the oil being comprised of at least one compound of the group trialkyl-, tricycloalkyl-, and triarylphosphatesters, said composition being capable of being shaped by extrusion or injection molding into self-lubricating objects, said bearing component having a thickness up to 4 mm.

4,448,701

AQUEOUS CUTTING FLUID FOR MACHINING FISSIONABLE MATERIALS

Walter K. Duerksen, Norris; John M. Googin, Oak Ridge, and Bradley Napier, Jr., Powell, all of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 28, 1982, Ser. No. 343,608
Int. Cl.³ C10M *3/04*
U.S. Cl. 252—49.3 1 Claim

1. A cutting fluid for machining fissionable materials consisting of an admixture of water, 35–65 vol. % of a glycol selected from the group consisting of ethylene glycol and propylene glycol, and a boron compound selected from the group consisting of boric acid and sodium tetraborate decahydrate with said boron compound being dissolved in the admixture in an effective neutron attenuating concentration in the range of about 5–12 grams/100 ml of the admixture.

4,448,702

FREEZING-POINT-LOWERING COMPOSITION AND METHOD

Gertrude Kaes, Vienna, Austria, assignor to Lang & Co., Chemisch-Technische Produkte Kommanditgesellschaft, Vienna, Austria

Filed Sep. 30, 1982, Ser. No. 428,912
Claims priority, application Austria, Oct. 12, 1981, 4378/81
Int. Cl.³ C09K *3/18*
U.S. Cl. 252—70 7 Claims

4. In an antifreezing and ice melting composition, the improvement wherein an active antifreezing and ice melting component of said composition is at least one water soluble sodium, potassium, ammonium or organoamine salt of at least one dicarboxylic acid having at least three carbon atoms together with at least one further antifreezing and ice dissolving compound selected from the group which consists of urea, inorganic ammonium compounds, and water soluble phosphates.

4,448,703

CARBOXYLIC SOLUBILIZER/SURFACTANT COMBINATIONS AND AQUEOUS COMPOSITIONS CONTAINING SAME

John W. Forsberg, Mentor-on-the-Lake, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Continuation of Ser. No. 238,394, Feb. 25, 1981, Pat. No. 4,368,133, which is a continuation-in-part of Ser. No. 26,384, Apr. 2, 1979, abandoned, which is a continuation-in-part of Ser. No. 948,460, Oct. 4, 1978, abandoned, which is a continuation-in-part of Ser. No. 946,294, Sep. 27, 1978, Pat. No. 4,329,249. This application Mar. 4, 1982, Ser. No. 352,692
The portion of the term of this patent subsequent to May 11, 1999, has been disclaimed.
Int. Cl.³ C10M *1/08, 1/06, 3/04*
U.S. Cl. 252—75 110 Claims

1. A composition comprising a continuous aqueous phase, and dispersed in said aqueous phase the combination of (A) at least one nitrogen-containing, phosphorus-free carboxylic solubilizer made by the reaction of (A)(I) at least one polycarboxylic acid acylating agent having at least one hydrocarbon-based substituent of at least about 30 to about 500 carbon atoms with (A)(II) at least one (a) N-(hydroxyl-substituted hydrocarbyl) amine, (b) hydroxyl-substituted poly(hydrocarbyloxy) analog of said amine or (c) mixtures of (a) and (b); and (B) at least one surfactant.

4,448,704

ARTICLE SUITABLE FOR WIPING HARD SURFACES

Donald Barby, Great Barrow; David E. Clarke, Bromborough; John Lloyd, Higher Bebington, and Zia Haq, Spital, all of England, assignors to Lever Brothers Company, New York, N.Y.

Filed May 24, 1982, Ser. No. 381,612
Claims priority, application United Kingdom, May 29, 1981, 8116438
Int. Cl.³ C11D *17/04*
U.S. Cl. 252—91 17 Claims

1. An article suitable for wiping hard surfaces to give a substantially streak-free result, said article comprising:

(a) a homogeneous aqueous liquid composition having a surface tension of less than 35 mNm^{-1}, which composition when applied to a surface and allowed to dry, dries substantially without the formation of discrete droplets or particles larger than 0.25 μm, said composition including at least one surface-active agent in a concentration not exceeding 1.5% by weight of total liquid composition;

(b) a substrate, for carrying said liquid composition, of a flexible sheet material selected from the group consisting of paper, woven, knitted and non-woven fabrics, the substrate being pre-washed with demineralized water or said homogeneous aqueous liquid composition;

the loading of the liquid composition (a) on the substrate (b) being within the range of from 0.5 to 10 grams per gram of substrate.

4,448,705

MONOPEROXYPHTHALIC ACID BLEACHING COMPOSITION CONTAINING DTPMP

Frederick W. Gray, Summit, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed May 20, 1982, Ser. No. 379,824
Int. Cl.³ C11D *3/30, 3/36, 3/39;* D06L *3/02*
U.S. Cl. 252—102 16 Claims

1. A bleaching and laundering composition comprising monoperoxyphthalic acid (MPPA) and/or a water-soluble salt thereof and a chelating agent to enhance the bleaching efficiency of the MPPA and/or the salt thereof consisting essentially of diethylene triamine pentamethylene phosphonic acid and/or a water-soluble salt thereof, said bleaching and laundering composition being devoid of an inorganic peroxygen compound.

7. A bleaching detergent composition comprising:

(a) from about 5 to 50%, by weight, of a bleaching agent comprising monoperoxyphthalic acid and/or a water-soluble salt thereof, said bleaching agent being devoid of an inorganic peroxygen compound;

(b) less than about 5%, by weight, of a chelating agent consisting essentially of diethylene triamine pentamethylene phosphonic acid (DTPMP) and/or a water-soluble salt thereof;

(c) from about 5 to 50%, by weight, of one or more detergent surface active agents selected from the group consisting of anionic, cationic, nonionic, ampholytic and zwitterionic detergents;

(d) from 5 to 80%, by weight, of a detergent builder salt selected from the group consisting of inorganic builders, carboxylates, polycarboxylates, polyhydroxysulfonates, salts of ethane 1-hydroxy-1,1-diphosphonic acid and ethane-1,1,2-triphosphonic acid and mixtures thereof; and

(e) the balance comprising water and optionally a filler salt.

4,448,706

DEFOAMING DETERGENT ADDITIVES CONTAINING BLEACHED TALLOW ACID PHOSPHATES

Bongsub Kim, Grosse Ile, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed May 10, 1982, Ser. No. 376,283
Int. Cl.³ C11D 17/00, 1/78
U.S. Cl. 252—108 5 Claims

1. A dishwashing detergent additive composition comprising (a) a double heteric polyoxyalkylene polyol prepared by condensing a mixture of 90 percent propylene oxide and 10 percent ethylene oxide with trimethylolpropane so as to provide a hydrophobic base having a molecular weight of about 3200 and then condensing a mixture of 90 weight percent ethylene oxide and 10 weight percent propylene oxide with the hydrophobic base so as to provide a hydrophilic portion having a molecular weight of about 1280, and (b) a bleached mono tallow alcohol phosphate ester, wherein the weight ratio of (a) to (b) is from 1:1 to 99:1.

4,448,707

MATERIAL FOR DRYING CUT PLANTS AND APPARATUS FOR FACILITATING SUCH DRYING

George S. Fenn, Elkton, Oreg., assignor to Fenn & Company, Cottage Grove, Oreg.

Filed Apr. 21, 1981, Ser. No. 256,106
Int. Cl.³ A23C 9/00; C09K 15/02, 15/06
U.S. Cl. 252—194 36 Claims

1. In combination for use in a solution for drying cut plants,

a drying agent providing a basic pH in the solution and having properties of becoming at least partially insoluble at a pH no greater in the solution than approximately 13.4 and

a mold inhibiting agent mixed with the drying agent and having properties of remaining inactive for different pH conditions in the solution until the occurrence of particular acidic conditions inducing molding of the plants and having properties of reacting with moisture under such particular acidic conditions in the solution to inhibit the molding of the plants.

4,448,708

USE OF QUATERNIZED POLYAMIDOAMINES AS DEMULSIFIERS

George R. Killat, and Jerry R. Conklin, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jan. 29, 1982, Ser. No. 343,782
Int. Cl.³ B01D 17/04; C08G 69/00
U.S. Cl. 252—344 11 Claims

1. A demulsification method which comprises contacting an emulsion of oil and water with an amount of a water-soluble quaternized polyamidoamine effective to cause the emulsion to separate into two essentially distinct phases, said quaternized polyamidoamine (1) having amide and amine moieties in its backbone and pendent quaternary ammonium moieties and (2) being an adduct of a polyamidoamine and a quaternary agent containing the quaternary ammonium moiety and a moiety capable of reacting with the polyamidoamine.

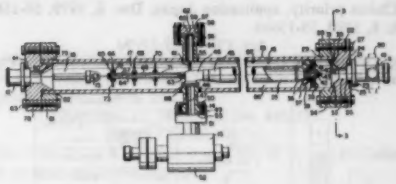
7. A quaternized polyamidoamine having a polyamidoamine backbone bearing sufficient pendent quaternary ammonium moiety to enable the quaternized polyamidoamine to function at least 10 percent better as a demulsifier for oil-in-water than does a polyamidoamine which is similar to the quaternized polyamidoamine except that it contains no pendent quaternary ammonium moieties, said quaternized polyamidoamine being an adduct of a polyamidoamine and a quaternizing agent selected from the group consisting of 2-hydroxy-3-chloropropyl trimethyl ammonium chloride, methacrylamidopropyl trimethyl ammonium chloride, 2-acryloyloxyethyl trimethyl ammonium chloride, N,N-dimethylaminoethyl acrylate, acrylamidopropyl trimethyl ammonium chloride, 2,3-epoxypropyl trimethyl ammonium chloride and 2,3-epoxypropyl dimethylamine.

4,448,709

PROPPANT CONCENTRATOR

Ronald S. Bullen, 700 703 6 Ave., Calgary, Alberta, Canada (T2P 0T9)

Filed Aug. 3, 1981, Ser. No. 289,623
Claims priority, application Canada, Nov. 6, 1980, 364139
Int. Cl.³ B01D 12/00, 43/00; E21B 43/26, 43/267
U.S. Cl. 252—359 D 19 Claims



1. An apparatus for concentrating a proppant/fluid slurry and foaming the concentrated slurry which comprises

a unitary cylindrical casing containing, in order, an inlet, a concentration zone, a mixing zone, a foaming zone, and an outlet for foamed fluid slurry, said inlet, concentration zone, mixing zone, foaming zone and outlet being in axial alignment with one another along the length of said cylindrical casing, so as to permit axial flow of slurry from said inlet to said outlet;

fixed deflector means located in the concentration zone to impart a helical path flow to slurry passing into said concentration zone;

a fixed cylindrical screen in the concentration zone downstream from the deflector means with reference to the direction of axial flow, said cylindrical screen defining a central cylinder coaxial with and within the unitary cylindrical casing, the ends of said cylinder being closed to the entry of slurry from the unitary cylindrical casing into the central cylinder defined by the screen; and

fluid outlet means for withdrawing fluid from the central cylinder.

4,448,710

CORROSION INHIBITORS INCLUDING A 3-DIALKYLAMINO-3-PHENYLETHENYLPROP-1-YNE

Eugene V. Hort, Wayne; Lowell R. Anderson, Morristown, and Dru W. Alwani, Wayne, all of N.J., assignors to GAF Corporation, New York, N.Y.

Filed Dec. 1, 1981, Ser. No. 326,309
Int. Cl.³ C09K 3/00; C23F 11/00, 11/14
U.S. Cl. 252—390 10 Claims

1. An aqueous composition for inhibiting the corrosion of metals placed therein comprising:

(a) an effective amount of a corrosion-inhibiting compound having the formula:

where

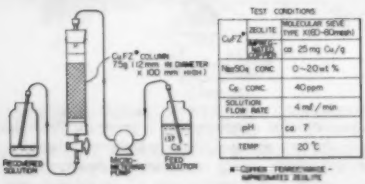
R_1 and R_2 are independently alkyl C_{1-8};
R_3 is independently hydrogen, halo, or alkyl C_1–C_8; and
n is 1–2; and
(b) a non-oxidizing acid.

4,448,711

PROCESS FOR PRODUCING ZEOLITE ADSORBENT AND PROCESS FOR TREATING RADIOACTIVE LIQUID WASTE WITH THE ZEOLITE ADSORBENT

Kenji Motojima, Mito, and Fumio Kawamura, Hitachi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 4, 1980, Ser. No. 213,005
Claims priority, application Japan, Dec. 6, 1979, 54-158302; Feb. 8, 1980, 55-13646
Int. Cl.³ B01J 27/24
U.S. Cl. 502—74 **8 Claims**



1. A process for producing a metal ferrocyanide-impregnated zeolite adsorbent, which comprises:
(1) impregnating zeolite with a salt of a metal capable of forming, sparingly, water-soluble ferrocyanide in the pores of the zeolite through ion exchange adsorption;
(2) treating the zeolite with a water-soluble ferrocyanide compound, thereby forming a ferrocyanide of the metal; and
(3) subjecting the zeolite to aging treatment to stabilize said metal ferrocyanide within the pores of said zeolite; said aging treatment being carried out by dipping in a highly concentrated aqueous solution of neutral alkali metal salt at room temperature to 100° C.

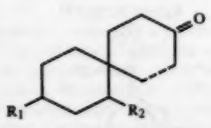
4,448,712

PERFUME COMPOSITIONS AND PERFUMED ARTICLES CONTAINING SPIRO-UNDECANONES AND -UNDECENONES AS PERFUME BASE

Antonius J. A. van der Weerdt, Huizen, and Willem Apeldoorn, Blaricum, both of Netherlands, assignors to Naarden International N.V., Ca Naarden-bussum, Netherlands

Filed Sep. 13, 1982, Ser. No. 417,207
Claims priority, application Netherlands, Sep. 16, 1981, 8104271
Int. Cl.³ C11B 9/00; A01K 7/46; C07C 49/317
U.S. Cl. 252—522 R **5 Claims**

1. Perfume composition, perfumed material and perfumed article, characterized by a contents of one or more derivatives of spiro[5.5]undecane-3-one and/or -undecene-3-one having the following formula



(I)

wherein R_1 and R_2 are hydrogen or methyl and the dotted line is a single or double bond with the provisio that when this dotted line is a double bond R_1 and R_2 are both hydrogen.

4. 7-Methyl-spiro[5.5]undecane-3-one.

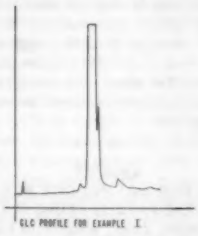
5. 7,9-Dimethyl-spiro[5.5]undecane-3-one.

4,448,713

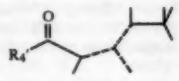
BRANCHED KETONES, ORGANOLEPTIC USES THEREOF AND PROCESS FOR PREPARING SAME

Richard M. Boden, Monmouth Beach, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 318,428, Nov. 5, 1981, Pat. No. 4,380,674, which is a continuation-in-part of Ser. No. 184,132, Sep. 4, 1980, Pat. No. 4,321,255. This application Nov. 19, 1982, Ser. No. 442,912
Int. Cl.³ A61K 7/46; C11B 9/00
U.S. Cl. 252—522 R **13 Claims**



1. A process for augmenting or enhancing the aroma or taste of a consumable material selected from the group consisting of perfume compositions, perfumed articles, colognes, medicinal products, smoking tobacco compositions, and smoking tobacco articles comprising the step of adding to a perfume composition, perfumed article base, cologne base, medicinal product base, smoking tobacco composition or smoking tobacco article component, one or more unsaturated branched chain ketone defined according to the structure:



in an organoleptic property modifying, augmenting or enhancing quantity, wherein R_4' represents C_1–C_4 lower alkyl, and one of the dashed lines represents a carbon-carbon double bond and the other of the dashed lines represent carbon-carbon single bonds.

4,448,714

ANTIBIOTIC POLYPEPTIDE COMPOUNDS PREPARED FROM STAPHLOCOCCUS BACTERIA

William J. Canliffe, 47 Tredgold Ave., Bramhope, Nr. Leeds; Elizabeth A. Eady, 20 Woodlea Rd., and Keith T. Holland, 13 Hall Park Ave., Horsforth, both of Leeds, all of England

PCT No. PCT/GB80/00164, 371 Date Jun. 4, 1981, 102(e) Date Jun. 4, 1981, PCT Pub. No. WO81/00962, PCT Pub. Date Apr. 16, 1981
PCT Filed Oct. 13, 1980, Ser. No. 270,523
Claims priority, application United Kingdom, Oct. 12, 1979, 79/35534
Int. Cl.³ C07G 7/00
U.S. Cl. 260—112 R **4 Claims**

1. An antibiotic polypeptide compound produced by *Staphylococcus epidermidis* NCIB 11536 or a mutant strain thereof, or an acid addition salt thereof, having a molecular weight of from about 950 to 10,000 and possessing bactericidal and bacteriolytic properties with respect to Gram-positive bacteria, said compound comprising within its peptide chain one residue of proline, two residues of glycine, and at least one residue of each of the amino acids isoleucine, phenylalanine, alanine, aspartic acid, glutamic acid, and lysine, said compound having UV absorption maxima at about 210 nm and at from about 260

to 280 nm, and said compound having a thermostability, when in a liquid medium, which is enhanced by acidity.

4,448,715

TAGGED PYROGLU-L-PHE-L-ARG DERIVATIVES, SUBSTRATES AND ASSAYS FOR KALLIKREIN

James W. Ryan, and Alfred Chung, both of Miami, Fla., assignors to University of Miami, Miami, Fla.

Filed Nov. 2, 1981, Ser. No. 317,412
Int. Cl.³ C07C *103/52*; C12Q *1/56*
U.S. Cl. 260—112.5 R **14 Claims**

1. Novel compounds of the general formula:

A—L—phe—L—arg—Y,

or methyl esters thereof or ethyl esters thereof, wherein,

group A contains a carbonyl moiety in amide linkage with the α-amino group of L—Phe and is any one of the groups consisting essentially of cyclopropanecarbonyl, cyclobutanecarbonyl, cyclopentanecarbonyl, cyclohexanecarbonyl, pyroglutamyl, 3,4-dehydroprolyl, 4-ketoprolyl, 4-OH-prolyl, 3-OH-prolyl, 3-phenylpropanoyl, thioprolyl, azetidine-2-carbonyl, thiazolidine-4-carbonyl, 5-X-prolyl, 4-X-prolyl, 3-X-prolyl, and 2-X-prolyl wherein X of any of the last four radicals is halo; and

group Y is joined to the α-carbonyl of L—Arg to form an ester or amide linkage therewith and is —OH or any known indicator that is radioactively or chemiluminescently tagged or which comprises a chromogen or fluorogen except that when A is pyroglutamyl Y is a radioactively or chemiluminescently tagged benzylamide group.

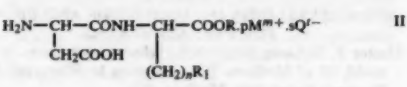
4,448,716

DIPEPTIDE SWEETENER-METAL COMPLEXES

Josef H. Tsau, Prospect Heights, Ill., assignor to G. D. Searle & Co., Skokie, Ill.

Filed Mar. 4, 1982, Ser. No. 354,574
Int. Cl.³ C07C *103/52*; A23L *1/236*
U.S. Cl. 260—112.5 R **21 Claims**

1. A dipeptide sweetener-metal complex of the formula:



II

wherein the stereochemical configuration is:

DL-DL, DL-L, L-DL or L L

wherein R is:

(a) alkyl of from one to six carbon atoms;

(b) alkylaryl, the alkyl portion of from one to six carbon atoms, inclusive, the aryl portion of from six to ten carbon atoms, inclusive; or

(c) cycloalkyl of from three to seven carbon atoms, inclusive;

wherein R_1 is:

(a) alkyl of one to six carbon atoms, inclusive;

(b) a saturated, unsaturated, or partially saturated six carbon ring, which may be optionally substituted by R_2;

wherein R_2 is:

(a) hydroxy;

(b) alkoxy of one to six carbon atoms, inclusive;

(c) alkyl of one to six carbon atoms, inclusive;

(d) halogen; or

(e) $—S(O)_f(CH_2)_k(CH_3)$ wherein f is 0, 1 or 2; wherein k is an integer of from 0 to 5, with the proviso that n is 1 or 2;

wherein n is an integer of from zero to 5 wherein m and t are integers of from one to three either the same or different;

wherein p is the M^{m+}/dipeptide sweetener ratio which may be from 0.1 to 3;

wherein s is the ratio of Q^{t-} to the dipeptide sweetener and wherein $p \times m = s \times t$;

wherein M^{m+} is a pharmacologically acceptable Metal ion or a combination of pharmacologically acceptable Metal ions;

wherein Q^{t-} is a pharmacologically acceptable anion, or a combination of pharmacologically acceptable anions;

wherein the dipeptide sweetener-metal complex may either by hydrated or unhydrated.

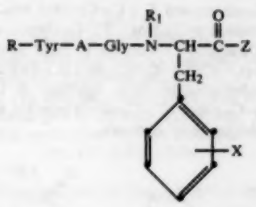
4,448,717

PHARMACOLOGICALLY ACTIVE PEPTIDES

Robert T. Shuman, Greenwood, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Nov. 12, 1982, Ser. No. 441,137
Int. Cl.³ C07C *103/52*
U.S. Cl. 260—112.5 E **15 Claims**

1. A compound of the formula



and pharmaceutically acceptable non-toxic acid addition salts thereof, in which

R is hydrogen, methyl, ethyl, cyclopropylmethyl, or allyl;

A is a residue of a D-amino acid selected from the group consisting of Ala, Abu, Nva, Val, Nle, Leu, Ile, Gly(Al), Gly(Cp), Met, Cys(Me), Met(O), Cys(Me)(O), Ser, Ser(Me), Thr, and Hse;

R_1 is hydrogen, C_1–C_3 primary alkyl, cyclopropylmethyl, allyl, ethylthiomethyl, 2-fluoroethyl, or propargyl;

X is fluoro, bromo, iodo, chloro, hydroxy, C_1–C_3 alkyl, trifluoromethyl, or C_1–C_2 alkoxy; and

Z is methyl or ethyl.

4,448,718

METHOD FOR THE PREPARATION OF COLLAGEN-GLYCOSAMINOGLYCAN COMPOSITE MATERIALS

Ioannis V. Yannas, Newton, and James F. Kirk, Cambridge, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Sep. 13, 1983, Ser. No. 531,804
Int. Cl.³ C07G *7/00*; C08H *1/00, 1/06*
U.S. Cl. 260—123.7 **10 Claims**

1. A process for preparing a crosslinked collagen-glycosaminoglycan composite material, which comprises:

forming an uncrosslinked composite material from collagen and a glycosaminoglycan; and

contacting said uncrosslinked composite with a gaseous aldehyde until a crosslinked product having an M_c of from about 800 to about 60,000 is formed.

4,448,719

TRIFLUOROMETHYL-SUBSTITUTED MONOAZO DISPERSE DYES

Hansrudolf Schwander, Riehen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

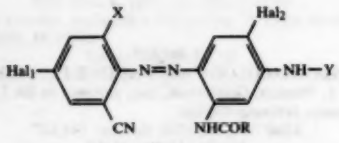
Filed Jun. 18, 1981, Ser. No. 274,910

Claims priority, application Switzerland, Jun. 20, 1980, 4752/80

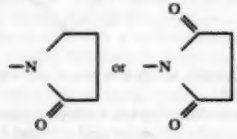
Int. Cl.[3] **C09B** *29/01, 29/085;* **D06P** *1/18, 3/36*

U.S. Cl. 260—152 **8 Claims**

1. A monoazo compound, or a mixture of different azo compounds, of the formula



in which Hal_1 and Hal_2 independently of one another are halo, X is CF_3, R is C_1–C_{14}-alkyl which is unsubstituted or substituted by halo or C_1–C_4-alkoxy, or C_1–C_4-alkoxy or C_1–C_4-alkoxy-C_1–C_4-alkoxy and Y is C_1–C_8-alkyl which is unsubstituted or substituted by hydroxy, C_1–C_4-alkoxy, cyano-C_1–C_4-alkoxy, C_1–C_4-alkoxy-C_1–C_4-alkoxy, halo, cyano, phenoxy, —COO-phenyl, —COO—C_1–C_4-alkyl in which alkyl is unsubstituted or substituted by furyl, hydroxy or C_1–C_4-alkoxy, —N(CO—C_1–C_4-alkyl) (C_1–C_4-alkyl) wherein alkyl is unsubstituted or substituted by hydroxy,



or Y is C_3–C_4-alkenyl or halo-C_3–C_4-alkenyl.

4,448,720

INVERSION OF THE 3α-AMINO GROUP ATTACHED TO THE β-LACTAM RING

Wataru Nagata, Hyogo, and Tsutomu Aoki, Osaka, both of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

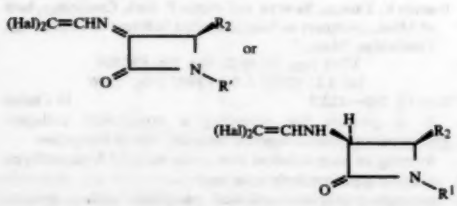
Division of Ser. No. 136,073, Mar. 28, 1980, Pat. No. 4,342,685. This application Apr. 7, 1982, Ser. No. 366,418

Claims priority, application Japan, Apr. 3, 1979, 54-40624

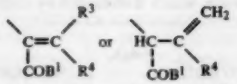
Int. Cl.[3] **C07D** *205/08, 498/04*

U.S. Cl. 260—239 A **12 Claims**

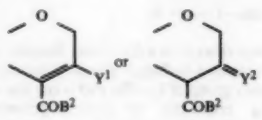
1. A compound of the formula



wherein R^1 is a group of the formula



in which R^3 and R^4 are the same or different C_1 to C_3 alkyl and COB^1 is carboxy or a conventional carboxylic ester group, and R^2 is C_2 to C_4 alkenyloxy, C_2 to C_4 alkynyloxy, C_1 to C_4 alkanoyloxy or C_1 to C_4 alkylthio, or R^1 and R^2 taken together represent a group of the formula



wherein Y^1 is hydrogen, halogen, C_1 to C_7 alkoxy or C_1 to C_7 alkyl which is unsubstituted or monosubstituted by halogen, acetoxy or 1-methyl-tetrazol-5-yl-thio, Y^2 is C_1 to C_2 alkylidene, COB^2 is carboxy or a conventional carboxylic ester group, and Hal is chloro, bromo or iodo, and wherein the conventional carboxylic ester group is diphenyl methyl ester, 2,2,2-trichloroethyl ester, p-nitrobenzyl ester, p-methoxybenzyl ester, phthalidyl ester, acetoxymethyl ester, pivaloyloxymethyl ester, t-butyl ester, phenyl ester, or indanyl ester.

4,448,721

HYDROXYVITAMIN D_2 COMPOUNDS AND PROCESS FOR PREPARING SAME

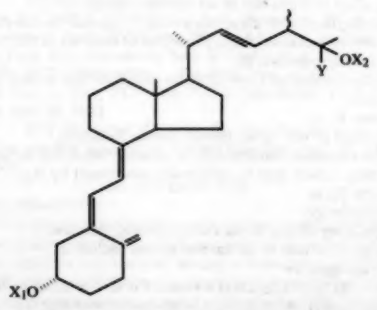
Hector F. DeLuca; Heinrich K. Schnoes, and Jacek W. Morzycki, all of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Sep. 20, 1982, Ser. No. 420,191

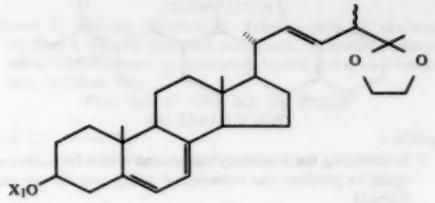
Int. Cl.[3] **C07J** *43/00, 9/00*

U.S. Cl. 260—239.5 **35 Claims**

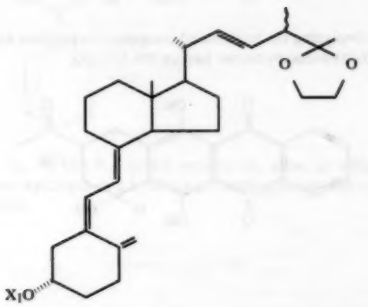
1. A process for preparing compounds having the formula



wherein X_1 and X_2 are each selected from hydrogen or acyl, and Y is an alkyl or aryl group, which comprises, irradiating a 5,7-diene steroid of the formula

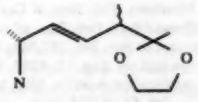


wherein X_1 is hydrogen or acyl,
with ultraviolet light to obtain the corresponding previtamin D product, isomerizing said previtamin D compound in an inert solvent at a temperature from about room temperature to about 100° C. for a time sufficient to reach equilibrium, thereby obtaining a vitamin D compound of the formula

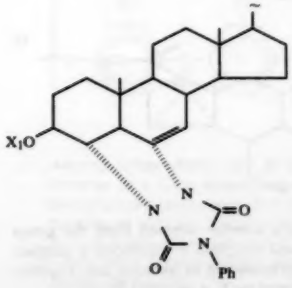


where X_1 is hydrogen or acyl, subjecting said vitamin D compound to acid catalyzed hydrolysis to remove the ketal protecting group thereby obtaining the corresponding ketone, subjecting said ketone to alkylation with a reagent of the formula YMg-halide or YLi, where Y is an alkyl or aryl group and the halide is chloride, bromide or iodide, and, optionally, acylating one or both free hydroxy groups.

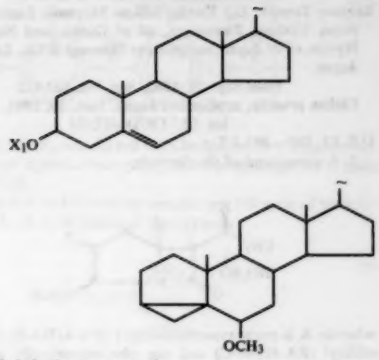
6. Compounds having the formula



where N is a steroid nucleus selected from the group consisting of



-continued



wherein X_1 is hydrogen or acyl.

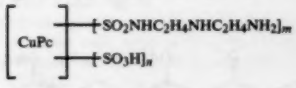
4,448,722

PHTHALOCYANINES

Nathan N. Crounse, Myrtle Beach, S.C., assignor to The Hilton-Davis Chemical Co., Cincinnati, Ohio

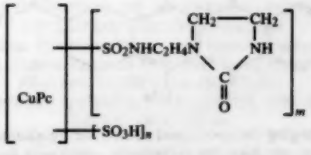
Division of Ser. No. 235,969, Feb. 19, 1981, Pat. No. 4,379,710, Continuation-in-part of Ser. No. 44,238, May 31, 1979, abandoned. This application Sep. 27, 1982, Ser. No. 423,932
Int. Cl.³ C09B 47/04
U.S. Cl. 260—245.1 10 Claims

1. Acid addition salts of a phthalocyanine of the formula



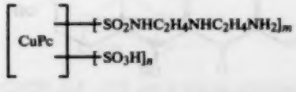
with a single acid or mixed acids wherein: Pc is phthalocyanine, m is a number from one to five, and n is a number from zero to one having a total of at least (0.05 m) but not more than (2 m) complexed molecules of one or more acids selected from the group consisting of hydrochloric acid, hydrobromic acid, acetic acid, propionic acid, glycolic acid, 3-hydroxypropionic acid, lactic acid, methanesulfonic acid and ethanesulfonic acid.

9. A phthalocyanine of the formula



wherein Pc is phthalocyanine, m is a number from one to five and n is a number from zero to one.

10. A phthalocyanine of the formula



wherein m is a number from one to give and n is a number from zero to one.

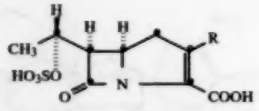
4,448,723

ANTIBIOTICS PA-41746-B AND C

Kentaro Tanaka; Eiji Kondo; Mikao Mayama; Kouichi Matsumoto; Yoshimi Kawamura, all of Osaka, and Naoki Tsuji, Hyogo, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Filed Sep. 29, 1982, Ser. No. 432,102
Claims priority, application Japan, Nov. 10, 1981, 56-180628
Int. Cl.³ C07D *487/04*
U.S. Cl. 260—245.2 T **3 Claims**

1. A compound of the formula



wherein R is carboxymethylsulfinyl (PA-41746-B) or formylsulfinyl (PA-41746-C) and the pharmaceutically acceptable salts thereof.

4,448,724

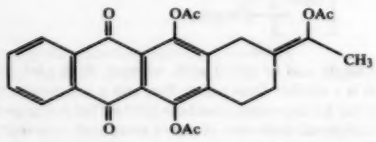
SYNTHESIS OF 4-DEMETHOXYDAUNOMYCINONE

Michael P. Cava, Wynnewood, Pa., and Domingo Dominguez, Santiago de Compostela, Spain, assignors to The Trustees of the University of Pennsylvania, Philadelphia, Pa.

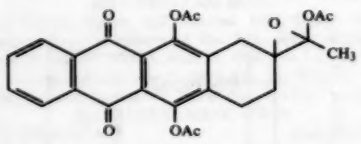
Filed Dec. 20, 1982, Ser. No. 451,523
Int. Cl.³ C07C *50/27, 87/10, 50/36*
U.S. Cl. 260—351.5 **1 Claim**

1. A process for making 4-demethoxydaunomycinone comprising:

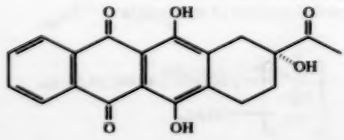
a. converting 9-acetyl-6,11-dihydroxy-7,8,9,10-tetrahydro-5,12-naphthacenedione by a perchloric acid catalyzed reaction to the enol-acetate compound having the formula



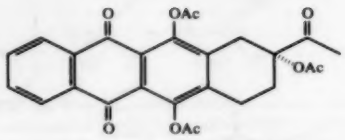
b. epoxidizing the enol-acetate compound with a peracid to produce the epoxidized compound having the formula



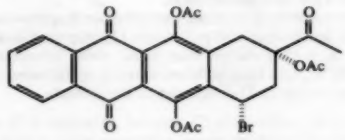
c. rearranging the epoxidized compound by alkaline hydrolysis to produce the trihydroxy compound having the formula



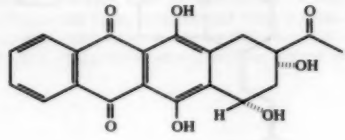
d. acetylating the trihydroxy compound to produce the triacetoxy compound having the formula



e. brominating the triacetoxy compound with a brominating agent to produce the brominated compound having the formula



f. solvolyzing the brominated compound to produce 4-demethoxydaunomycinone having the formula



4,448,725

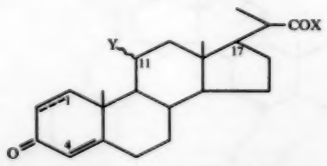
Δ4-STEROID COMPOUNDS AND A PROCESS FOR THEIR PRODUCTION

Wolfgang Preuss, Monheim, Fed. Rep. of Germany, assignor to Henkel KGaA, Duesseldorf, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 262,965, May 12, 1981, abandoned. This application Aug. 13, 1982, Ser. No. 407,790
Claims priority, application Austria, May 12, 1980, 2535/80
Int. Cl.³ C07J *9/00*
U.S. Cl. 260—397.1 **8 Claims**

1. Δ4-Steroid compounds optionally containing further double bonds in the 1-position and an 11-oxygen function and corresponding to formula I:

(I)



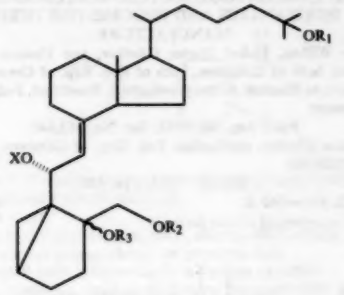
in which X represents a member selected from the group consisting of halogen and NH_2 and Y represents a member selected from the group consisting of hydroxy and, together with the C-atom substituted by Y, a carbonyl group.

4,448,726
RING A- AND TRIENE-MODIFIED VITAMIN D COMPOUNDS

Hector F. DeLuca; Heinrich K. Schnoes, both of Madison; Herbert E. Paaren, Deerfield, and Connie M. Smith, Madison, all of Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed May 11, 1983, Ser. No. 493,537
Int. Cl.³ C07J 9/00
U.S. Cl. 260—397.2 9 Claims

1. A compound having the formula



where R_1, R_2 and R_3, which may be the same or different, represent hydrogen or a hydroxy-protecting group, and where X is alkyl.

4,448,727
COLOR-STABILIZED HALOBISPHENOLETHYLENE POLYCARBONATES

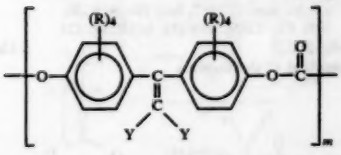
Arnold Factor, Scotia, N.Y., and Keith N. Sannes, Mt. Vernon, Ind., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 947,659, Oct. 2, 1978, abandoned, which is a continuation-in-part of Ser. No. 668,857, Mar. 22, 1976, abandoned. This application Sep. 2, 1981, Ser. No. 298,662
Int. Cl.³ C07C 69/96; C08G 63/62
U.S. Cl. 260—463 15 Claims

1. A thermally stable, color-stabilized halobisphenolethylene polycarbonate composition prepared by combining:

(A) a polycarbonate having a number average molecular weight of at least about 5000 comprising:

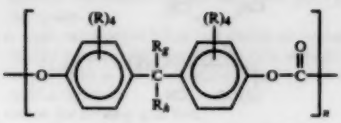
(1) about 1–100 parts by weight of halobis(phenyl)ethylene carbonate units having the formula



(II)

wherein independently each R is hydrogen, chlorine, bromine or a C_{1-30} monovalent hydrocarbon or hydrocarbonoxy group; each Y is hydrogen, chlorine or bromine, at least one Y being chlorine or bromine; and m is an integer of at least 2; and

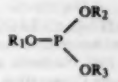
(2) about 99–0 parts by weight of arene carbonate units having the formula



(IV)

wherein R_g and R_h are each hydrogen or a C_{1-30} monovalent hydrocarbon group and n is an integer of at least 2; with

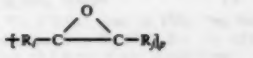
(B) from 0.01 to 4.0 parts by weight, per 100 parts of component A, of a phosphite of the formula



(I)

wherein R_1, R_2 and R_3 are each hydrogen or C_{1-30} alkyl, aryl, cycloarkyl, arylalkyl or alkaryl, or combinations thereof, at least one of R_1, R_2 and R_3 being other than hydrogen or a group directly bonded to an oxygen atom by a phenyl ring carbon atom except that when R_2 and R_3 are phenyl, R_1 can be hydrogen;

(C) from 0.01 to 5.0 parts by weight, per 100 parts of component A, of an epoxide selected from the group consisting of aliphatic epoxides of the formula



(VI)

wherein each of R_i and R_j is a C_{1-24} alkyl group and p is an integer from 1 to about 10;

cycloaliphatic epoxides containing 1–2 aliphatic rings of 6 carbon atoms each with at least one oxygen bridge being attached to adjacent carbon atoms in at least one cycloaliphatic ring; and

aromatic epoxides selected from glycidyl ethers, diglycidyl ethers containing 1–3 aromatic rings, and polyglycidyl ethers containing 1–3 aromatic rings; and

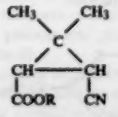
(D) from 0.01 to 5.0 parts by weight, per 100 parts of component A, of a mixture of a compound selected from the group consisting of cadmium, barium and cerium salts of a C_{2-20} alkanoic or C_{7-20} aromatic carboxylic acid or of carbonic acid with a stabilizing amount of said acid.

4,448,728
PREPARATION OF CIS ESTER-NITRILE CYCLOPROPANE COMPOUNDS

Renée Jullien, Palaiseau, France, and Samir Benayache, Constantine, Algeria, assignors to Roussel Uclaf, Paris, France

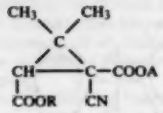
Filed Jun. 19, 1981, Ser. No. 275,291
Claims priority, application France, Jun. 20, 1980, 80 13734
Int. Cl.³ C07C 121/46
U.S. Cl. 260—464 6 Claims

1. A process for the preparation of a compound of the formula



III

wherein —COOR and —CN are in the cis positions and R is alkyl of 1 to 4 carbon atoms comprising heating a mono-ester, mono-salt, mono-nitrile compound of the formula



where R is alkyl of 1 to 4 carbon atoms and wherein —CN and —COOR are in the cis position and wherein A is an alkali metal in an aprotic solvent at 100° to 150° C. in the presence of 1 to 4 moles of water per mole of the said mono-ester, mono-salt, mono-nitrile.

4,448,729

LEUCOTRIENE ANTAGONISTS

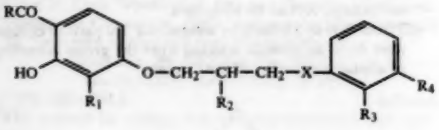
Dieter H. Klaubert, Perkiomenville; Anthony F. Kreft, III, Devon, and Stanley C. Bell, Narberth, all of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Aug. 25, 1982, Ser. No. 411,200

Int. Cl.³ C07C *121/80, 69/612, 103/29*

U.S. Cl. 260—465 D **8 Claims**

1. A compound of the formula



wherein

R is ethyl or methyl

R_1 is hydrogen or alkyl of 1 to 6 carbon atoms;

R_2 is hydrogen or hydroxyl;

X is —O— or —NH—;

R_3 is hydrogen, —CN or $—CONH_2$; and

R_4 is $—NH_2$ or $—NHCOCO_2Z$ where Z is hydrogen or alkyl of 1 to 6 carbon atoms;

or a pharmaceutically acceptable salt thereof.

4,448,730

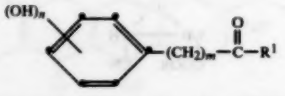
HYDROXYBENZOHYDROXAMIC ACIDS, BENZAMIDES AND ESTERS AND RELATED COMPOUNDS AS RIBONUCLEOTIDE REDUCTASE INHIBITORS

Bartholomeus van't Riet, 3419 Noble Ave., Richmond, Va. 23222; Howard L. Elford, 3313 Gloucester Rd., Richmond, Va. 23227, and Galen L. Wampler, 6938 Chamberlayne Rd., Mechanicsville, Va. 23111

Continuation-in-part of Ser. No. 247,171, Mar. 24, 1981, Pat. No. 4,394,389 which is a continuation-in-part of Ser. No. 16,472, Mar. 1, 1979, Pat. No. 4,263,322. This application Apr. 20, 1982, Ser. No. 370,023

U.S. Cl. 260—500.5 H **5 Claims**

1. A method of inhibiting ribonucleotide reductase which comprises administering to a mammal carrying a tumor having a relatively high ribonucleotide reductase level, an amount of a compound according to the following formula effective to inhibit ribonucleotide reductase



wherein n is 2, 3 or 4, m is 1, 2 or 3 and R^1 is NH_2, NHOH, $NH(C_1–C_3)$alkyl, $N[(C_1–C_3)alkyl]_2$, aryl-NH_2 or O-phenyl except that when n is 2 or 3, m is 0 and R^1 is NHOH, no OH can be ortho to the carboxyl.

4,448,731

1,2-DIHALOGENOALKYLSULFONYL ISOCYANATES AND 1,2-DI-HALOGENOCYCLOALKYLSULFONYL ISOCYANATES AND PROCESS FOR THEIR MANUFACTURE

Lothar Willms, Unkel; Dieter Günther, and Thomas Hüttelmaier, both of Kelkheim, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

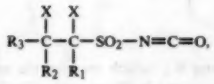
Filed Aug. 30, 1982, Ser. No. 412,848

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1981, 3134548

Int. Cl.³ C07C *143/828*

U.S. Cl. 260—545 R **4 Claims**

1. A compound of the formula



wherein

X is halogen;

R_3 is hydrogen, halogen, or $C_1–C_4$ alkyl;

R_1 and R_2, taken alone, are the same or different and are hydrogen, halogen, $(C_1–C_4)$ alkoxy, $(C_1–C_6)$ alkyl, such alkyl substituted with up to 4 halogen atoms, or such alkyl interrupted by an oxygen atom; or

R_1 and R_2, taken together with the carbon atoms to which the are attached, form a 5- to 7-membered saturated or unsaturated alicycle or such an alicycle substituted by 1 to 3 halogen atoms or mono- or di-substituted by $(C_1–C_3)$ alkyl.

4,448,732

2-OXO-1,3-DIOXOL-4-YLMETHYL ESTERS OF PENICILLANIC ACID 1,1-DIOXIDE

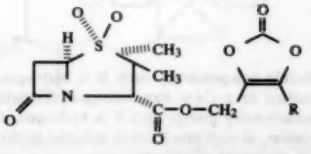
Willard M. Welch, Jr., Mystic, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Sep. 7, 1982, Ser. No. 415,281

Int. Cl.³ C07D *499/00;* **A61K** *31/425*

U.S. Cl. 260—245.2 **5 Claims**

1. A compound of the formula



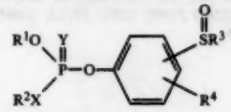
wherein R is selected from the group consisting of hydrogen, methyl and phenyl.

4,448,733
PRODUCTION OF ALKYLSULFINYL SUBSTITUTED ORGANOPHOSPHORIC ACID ESTERS

Junichi Saito, Tokyo; Kozo Shiokawa, Kanagawa, and Toshiyuki Takemoto, Tokyo, all of Japan, assignors to Nihon Tokushu Noyaku Seizo K.K., Tokyo, Japan

Filed Apr. 6, 1982, Ser. No. 366,101
Claims priority, application Japan, Apr. 6, 1981, 56-50536
Int. Cl.³ C07F 9/09, 9/165
U.S. Cl. 260—985 6 Claims

1. A process for preparing an alkylsulfinyl-substituted phenylphosphoric acid ester of the formula



in which

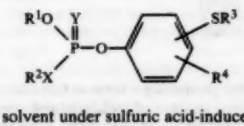
R^1 and R^2 each independently is alkyl, haloalkyl, alkenyl or optionally substituted aryl,

R^3 is alkyl,

R^4 is hydrogen, halogen, alkyl, alkoxy, nitro, cyano, alkoxycarbonyl group, phenyl or phenoxy, and

X and Y each independently is oxygen or sulfur,

which comprises reacting hydrogen peroxide with an alkylmercapto-substituted phenylphosphoric acid ester of the formula

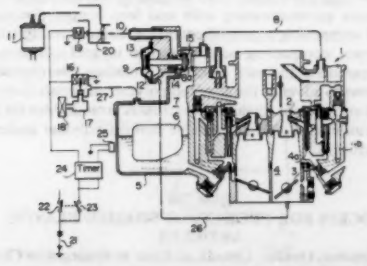


in an aprotic solvent under sulfuric acid-induced acidic conditions in the presence of an organic carboxylic acid.

4,448,734
CARBURETOR

Kenji Shibano, Musashimurayama, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 21, 1982, Ser. No. 435,789
Claims priority, application Japan, Oct. 31, 1981, 56-175255
Int. Cl.³ F02M 5/08
U.S. Cl. 261—26 4 Claims



1. A system for preventing percolation of fuel in a carburetor having a float chamber communicated with an induction passage of the carburetor through a vent passage, comprising:

a passage for communicating said float chamber with the atmosphere;

a first valve provided in said passage for closing it;

a discharge passage connected with said float chamber at an upper portion thereof;

a canister connected with a discharge end of said discharge passage, said canister being filled with fuel vapor absorbing material;

a second valve provided in said discharge passage for closing the passage and opening the vent passage;

a fan provided in said discharge passage for delivering gases to said canister;

a motor for driving said fan;

actuating means for actuating said first and second valves;

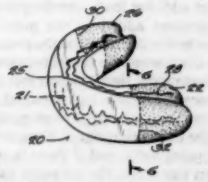
a thermo sensor operative to produce a signal when the temperature of the fuel in the float chamber rises to a predetermined value; and

means for opening said first and second valves and operating said motor for a predetermined period in response to the stop of the engine operation and to said signal of said thermo sensor, whereby the air is introduced into said float chamber and discharged to said canister.

4,448,735
TOOTH POSITIONER WITH HARDER AREAS

Gerald W. Huge, Racine, Wis., assignor to Professional Positioners, Inc., Racine, Wis.

Division of Ser. No. 275,002, Jun. 18, 1981, Pat. No. 4,370,129.
This application Sep. 30, 1982, Ser. No. 431,893
Int. Cl.³ B29C 5/08; B29H 7/00
U.S. Cl. 264—16 5 Claims



1. A method for forming a tooth positioner having at least a first portion composed of a first resilient cured material and at least a second, integral portion composed of a second resilient cured material, said first and second resilient cured materials being pourable liquids before curing, comprising the steps of:

A. providing first and second materials curable to form said first and second resilient cured materials;

B. providing a counterpart of a patient's teeth in their desired positions in the patient's mouth;

C. enclosing the counterpart in a mold;

D. supporting the mold in a position such that a portion of the mold is bottom most which is to receive a material selected from said first and second materials and pouring the selected material in said mold in sufficient quantity to cover same of the teeth of said counterpart to form said first or second portion, and partially curing the material placed in said mold;

E. supporting said mold to receive the other of said first and second materials and pouring said other material in said mold, covering remaining teeth of said counterpart to form at least one other portion in contact with the first partially cured portion; and

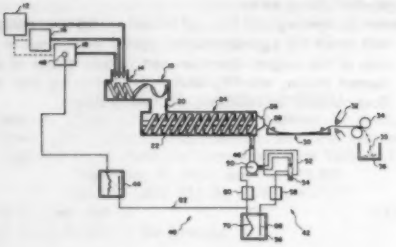
F. curing said first and second portions to form an integral positioner.

4,448,736

CONTINUOUS IN-LINE MELT FLOW RATE CONTROL SYSTEM

Donald B. Emery, Warrenville, and William M. Herring, Elburn, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed May 24, 1982, Ser. No. 381,048
Int. Cl.³ B29F 3/06
U.S. Cl. 264—40.1 25 Claims



1. A method for controlling the molecular weight of a polymer being extruded through a die head at the outlet end of an extruder by altering, in a forward control manner, the mixture of degradent and polymer fed to the extruder relative to a target melt flow rate related to the molecular weight of polymer desired, said method comprising the steps of: monitoring the viscosity of a slip stream of melt from the extruder upstream from the die head; converting the monitored viscosity value to a process signal; comparing the process signal with a set point value related to a target melt flow rate; generating a correction signal when there is a difference between the process signal and the set point value; supplying said correction signal to a degradent additive feed control system for adjusting the amount of degradent added to the polymer fed to the extruder in response to the deviation of the process signal from the set point value; comparing the actual process signal with an approximated process model signal which includes at least one model for the process transition and a model for dead time; after the process transition and dead time periods have completely reacted to the correction signal, comparing the process signal with the set point value and if there is still a difference between the process signal and the set point value, generating a further correction signal and repeating the above thereby to maintain the melt flow rate as closely as possible to a target melt flow rate related to the desired polymer molecular weight.

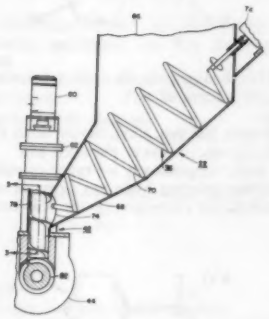
10. An apparatus for controlling the molecular weight of the polymer being extruded through a die head at the outlet of an extruder by altering, in a forward control manner, the mixture of degradent and polymer fed to the extruder relative to a target melt flow rate related to the molecular weight of polymer desired, said apparatus comprising: means for monitoring the viscosity of a slip stream of melt from the extruder upstream of the die head; means for converting the monitored viscosity value to a process signal; means for comparing the process signal with a set point value related to a target melt flow rate; means for generating a correction signal when there is a difference between the process signal and the set point value; means for supplying said correction signal to a degradent additive feed control system for adjusting the amount of degradent added to the polymer fed to the extruder in response to the deviation of the process signal from the set point value; means for comparing the actual process signal with an approximated process model signal which includes at least one model for the process transition and a model for dead time; means for comparing the process signal with the set point value after the process transition and dead time periods have elapsed and a steady state condition has been reached, and if there is still a difference between the process signal and the set point value, said apparatus being operable to generate a further correction signal thereby to maintain the melt flow rate as close as possible to the target melt flow related to the desired polymer molecular weight.

4,448,737

METHOD AND APPARATUS FOR PRODUCING FOAMED PRODUCTS FROM A MIX OF RECLAIMED PLASTIC FOAM MATERIAL AND FOAMABLE VIRGIN PLASTIC RESIN

David E. Johnson, Canandaigua, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 30, 1982, Ser. No. 454,781
Int. Cl.³ B29D 27/00; B29C 17/03; B29H 19/00
U.S. Cl. 264—53 12 Claims



1. A method for producing a foamed thermoformable polymer material from a mixture of reclaimed polymer foam material and a foamable virgin polymer resin; comprising:

(a) conveying a supply of reclaimed polymer foam material fluff into a feed hopper; concurrently conveying a separate supply of foamable virgin polymer resin into said feed hopper; intermixing said plastic materials in said hopper to facilitate continual and uniform free flow of the intermixed polymer materials towards a discharge in said feed hopper, said intermixing comprising imparting movement to said intermixed polymer materials in said feed hopper away from said discharge to prevent compacting of said materials at the discharge and to facilitate free flow through said discharge at a constant material density;

(b) conveying said intermixed polymer materials into a compressor communicating with said feed hopper discharge and comprising a pair of counter-rotating interdigitating screws; compacting said materials in said compressor intermediate the pair of counter-rotating interdigitating screws to advance the admixed polymer materials through said compressor towards an extrusion arrangement for the extrusion of a thermoformable foamed polymer material product.

4,448,738

PROCESS FOR PRODUCING FOAMED PLASTIC ARTICLES

Zenas Crocker, Quebec, Canada, assignor to Synergistics Chemicals Ltd., Ontario, Canada

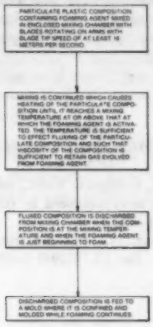
Continuation of Ser. No. 149,642, May 14, 1980, abandoned.
This application Mar. 15, 1982, Ser. No. 358,046
Int. Cl.³ B29D 27/04
U.S. Cl. 264—54 11 Claims

1. A method of making a molded foamed thermoplastic article from a particulate thermoplastic resin comprising:

intensively mixing and thermokenetically heating a particulate composition comprising thermoplastic resin particles

and a foaming agent, said foaming agent having a trigger temperature at which a gas is evolved therefrom to effect foaming, said mixing and heating being effected by mixing said particulate composition in an enclosed mixing chamber with a plurality of blades attached to arms rotating within said chamber with a blade tip speed of at least about 18 meters per second;

continuing said mixing of said particulate composition in said enclosed chamber until said particulate composition is heated to a mixing temperature at or above said trigger temperature of said foaming agent, said mixing temperature being sufficient to effect fluxing of said particulate composition to an extent such that the fluxed composition has a viscosity sufficient to contain gas evolved from said foaming agent;


PARTICULATE PLASTIC COMPOSITION CONTAINING FOAMING AGENT MIXED IN ENCLOSED MIXING CHAMBER WITH BLADES ROTATING ON ARMS WITH BLADE TIP SPEED OF AT LEAST 18 METERS PER SECOND.
MIXING IS CONTINUED WHICH CAUSES HEATING OF THE PARTICULATE COMPOSITION UNTIL IT REACHES A MIXING TEMPERATURE AT OR ABOVE THAT AT WHICH THE FOAMING AGENT IS ACTIVATED. THE TEMPERATURE IS SUFFICIENT TO EFFECT FLUXING OF THE PARTICULATE COMPOSITION AND SUCH THAT VISCOSITY OF THE COMPOSITION IS SUFFICIENT TO RETAIN GAS EVOLVED FROM FOAMING AGENT
FLUXED COMPOSITION IS DISCHARGED FROM MIXING CHAMBER WHEN THE COMPOSITION IS AT THE MIXING TEMPERATURE AND WHEN THE FOAMING AGENT IS JUST BEGINNING TO FOAM.
DISCHARGED COMPOSITION IS FED TO A MOLD WHERE IT IS CONFINED AND MOLDED WHILE FOAMING CONTINUES.

discharging the fluxed composition from said mixing chamber when the fluxed composition is at said mixing temperature and when said foaming agent is just beginning to foam; and

feeding the discharged fluxed composition to a mold and confining the composition within said mold to mold the composition while foaming of said composition continues, to form a molded foamed plastic article in said mold.

4,448,739

METHOD AND DEVICE FOR MANUFACTURING MULTI-PLY SHEETS

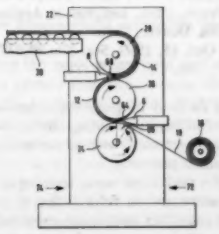
Heinz G. Baus, Wartbodenstrasse 35, CH-3626 Hünibach-Thun, Switzerland

Filed Mar. 11, 1982, Ser. No. 357,336

Claims priority, application Fed. Rep. of Germany, Mar. 16, 1981, 3110157

Int. Cl.³ B29D 9/02

U.S. Cl. 264—132 **12 Claims**



1. Method of manufacturing multi-ply sheets containing plastic material supplied by way of at least two heated, plastic state, extruded webs which are produced by extruders having at least two corresponding flat sheet dies and which are joined, together with an introduced structured web, by means of cooperating rolls, which comprises

feeding sequentially the at least two heated, plastic state, extruded webs from the flat sheet dies to a single common laminator comprising a single common set of at least three cooperating chill rolls providing at least two corresponding roll nips each defined between adjacent corresponding rolls of the set of rolls and constituting at least an upstream roll nip and a downstream roll nip, while also introducing the structured web to the laminator,

such that sequentially the structured web is applied onto one of the adjacent rolls providing the upstream roll nip at a point thereof prior to reaching the roll nip sufficiently for achieving uniform introduction of the structured web into the upstream roll nip, then a first of the heated, plastic state, extruded webs is introduced from a first of the flat sheet dies into the upstream roll nip in operative contact with the adjacent side of the structured web thereat for heat bonding thereof to the structured web whereupon the structured web and first extruded web are conducted to the downstream roll nip, and thereafter a second of the heated, plastic state, extruded webs is introduced from a second of the flat sheet dies into the downstream roll nip such that the structured web is disposed at the downstream roll nip between the second extruded web and the first extruded web and in operative contact with the second extruded web for heat bonding thereof to the structured web,

the heated extruded webs being heated sufficiently for providing a heat content for achieving a corresponding reliable permanent bond thereof to the structured web and the corresponding flat sheet dies being disposed in the immediate proximity of the corresponding roll nips sufficient for maintaining that heat content at the point of contact between the respective heated extruded web and the structured web,

whereby to form a multi-ply sheet containing the structured web sealingly sandwiched between the at least two extruded webs.

10. Device for manufacturing multi-ply sheets containing plastic material supplied by way of at least two heated, plastic state, extruded webs and which are joined, together with an introduced structured web, which comprises

a single common laminator comprising a single common set of at least three cooperating chill rolls providing at least two corresponding roll nips each defined between adjacent corresponding rolls of the set of rolls and constituting at least an upstream roll nip and a downstream roll nip,

feeder means for introducing a structured web to the upstream nip and arranged for applying the structured web onto one of the adjacent rolls providing the upstream roll nip at a point thereon prior to reaching the roll nip sufficiently for achieving uniform introduction of the structured web into the upstream roll nip, and

at least two corresponding extruders each having a flat sheet die, a first of the dies being arranged in the immediate proximity of the upstream roll nip and a second of the dies being arranged in the immediate proximity of the downstream roll nip for extruding plastic material from such dies in the form of at least two corresponding heated, plastic state, extruded webs,

said first die being arranged for introducing a first of the heated, plastic state, extruded webs into the upstream roll nip in operative contact with the adjacent side of the structured web thereat for heat bonding thereof to the structured web, the laminator being arranged for conducting the structured web and the first extruded web to the downstream roll nip,

said second die being arranged for introducing a second of the heated, plastic state, extruded webs into the downstream roll nip such that the structured web is disposed at the downstream roll nip between the second extruded web and the first extruded web and in operative contact with

the second extruded web for heat bonding thereof to the structured web, and

said corresponding extruders being arranged for supplying the extrudable plastic material from the first and second dies in sufficiently heated condition for providing a heat content for achieving a corresponding reliable permanent bond thereof to the structured web and the first and second dies being disposed in the immediate proximity of the corresponding roll nips sufficiently for maintaining that heat content at the point of contact between the respective heated extruded web and the structured web,

whereby to form a multi-ply sheet containing the structured web sealingly sandwiched between the at least two extrudeded webs.

4,448,740

PROCESS FOR PRODUCING ACRYLIC FIBERS WITH EXCELLENT SURFACE SMOOTHNESS

Shigeru Sawanishi; Yozo Shiomi, and Akira Yamane, all of Okayama, Japan, assignors to Japan Exlan Company Limited, Osaka, Japan

Filed Jan. 6, 1983, Ser. No. 456,292

Claims priority, application Japan, Jan. 26, 1982, 57-11089

Int. Cl.³ D01F *6/18*

U.S. Cl. 264—182 **5 Claims**

1. A process for producing acrylic fibers having excellent surface smoothness and a color development ratio not less than 105%, which comprises:

wet-spinning an acrylonitrile polymer spinning solution having a temperature of from 50° to 70° C. and a viscosity of from 40 to 200 poises at 30° C. (a) with a spinning draft of from 0.06 to 0.15 in the case where the spinnerette orifice capillary length is 0.5 mm or less, or (b) with a spinning draft of from 0.15 to 1.0 in the case where the spinnerette orifice capillary length exceeds 0.5 mm,

coagulating and water-washing the resulting fibers substantially without stretching, and

wet-heat stretching the fibers not less than 8 times in length at a temperature not lower than 80° C.

4,448,741

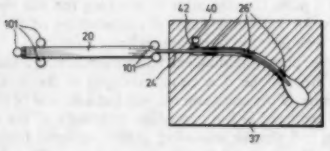
METHOD OF MOLDING PLASTIC WORKPIECES ABOUT SLENDER PERMANENT INSERTS

Robert D. Schad, Toronto, Canada, assignor to Husky Injection Molding Systems Ltd., Bolton, Canada

Continuation-in-part of Ser. No. 327,900, Dec. 7, 1981, Pat. No. 4,422,995. This application Feb. 25, 1982, Ser. No. 352,215

Int. Cl.³ B29D *3/00, 12/02;* B29C *6/02*

U.S. Cl. 264—251 **5 Claims**



1. A method of injection-molding a workpiece of plastic material containing a prefabricated slender insert permanently embedded therein, comprising the steps of:

(a) introducing at least part of the prefabricated insert into a first mold portion which defines a generally annular first-shot cavity encircling a portion of the insert so introduced, said cavity being such as to form a spacer with an axially throughgoing recess adjacent the spacer periphery;

(b) injecting plastic material into said first-shot cavity to form a generally annular spacer with an axial recess therein;

(c) upon hardening of said spacer and removal thereof together with said insert from said first mold portion, introducing said insert with said spacer into a second mold portion having a second-shot cavity, of greater length than said first-shot cavity, divided along a centerline thereof by said spacer into two sections within which said insert is held substantially centered by positive contact of said spacer on all sides with the peripheral walls of said second-shot cavity except adjacent said recess;

(d) injecting plastic material into said sections to embed said insert in a plastic sheath on opposite sides of said spacer, said material flowing through said recess from one side of said spacer to the opposite side thereof;

(e) allowing the plastic material last injected to harden around said insert into a finished workpiece incorporating said spacer; and

(f) removing said workpiece from said second-shot cavity.

4,448,742

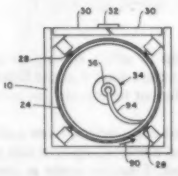
LOW COST THERMAL PROTECTION SYSTEM PROCESSING

Robert V. Kromrey, Campbell, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 21, 1982, Ser. No. 370,233

Int. Cl.³ B29D *3/00*

U.S. Cl. 264—270 **10 Claims**



1. A method for spin casting an extrudable uncured material to form a concentric layer of controlled thickness on the interior of an elongated cylindrical body which comprises the steps of rotating an elongated cylindrical body at a desired speed of rotation about its longitudinal axis, applying said extrudable uncured material as a continuous ribbon in helical fashion from one selected point in said body to another selected point in said body, with each newly applied turn contiguous to the next immediately applied turn, continuing to rotate said body until said material is leveled between said selected points, and at least partially curing said material while continuing to rotate said body.

4,448,743

GENERATION, INSULATED CONFINEMENT, AND HEATING OF ULTRA-HIGH TEMPERATURE PLASMAS

Robert W. Bass, Provo, Utah, assignor to Applied Fusion Research Corporation, Denver, Colo.

Filed Oct. 15, 1979, Ser. No. 84,837

Int. Cl.³ G21B *1/00*

U.S. Cl. 376—103 **5 Claims**

1. An improved method of generation, insulated confinement and heating of plasmas, including the known steps of:

(a) surrounding a target mass with an ambient fluid medium at a predetermined pressure;

(b) projecting upon said target mass, to bring it to a predetermined temperature and to fully ionize it, pulsed energy selected from the class consisting essentially of pulsed photon energy or pulsed particle-beam kinetic energy; while

(c) relying upon the spontaneous creation of an electrostatic double-layer between said ionized mass and said ambient medium to provide substantially complete thermal insulation of said ionized mass from energy losses by ordinary

electron thermal conductivity, or convection, leaving the dominant energy loss from said ionized mass to be bremmstrahlung losses P_{brem} predictable by

$$P_{brem}=C(p^2/T^{3/2})((4/3)\pi r^3),$$

where p denotes pressure in atm and T denotes temperature in °K., and

$$C=2.12\times10^9\ (°K.)^{3/2}\text{Watts/cm}^3$$

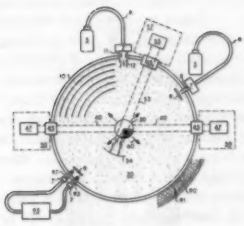
is a known plasma-physical constant;

(d) compensating completely for said bremmstrahlung loss by supplying additional radiant energy to said ionized mass so as to maintain said temperature of said ionized mass at a substantially steady level; wherein

(e) the frequency range of said additional radiant energy is so selected as to be absorbable by said ionized mass, namely

$$(c/4)/r\leq\nu\leq D(p^2/T^{5/2})^{\frac{1}{3}},$$

where r denotes the radius of said ionized mass in cm, where c denotes the speed of light in cm/sec, where p denotes the pressure of said ambient fluid medium in atm,



where T denotes the temperature of said ionized mass in °K., where ν denotes the frequency of said additional radiant energy in Hertz, and where $D=2\times10^{18}$ is a constant; and

(f) adjusting the power level of said additional radiant energy to maintain said ionized mass in a substantially steady state by just compensating for said ionized mass's power losses;

wherein the improvement comprises the subsequent additional steps of:

(g) increasing the static pressure of said ambient medium to a pressure greater than atmospheric, thereby, through the medium of the thermal-barrier double-layer, equally increasing the static pressure of said ionized mass, so as to enable said mass to absorb more of said radiant energy, thereby increasing said temperature of said ionized mass, but also increasing its power losses; while simultaneously

(h) monitoring said radius r and said temperature T; and

(i) increasing said power level of said radiant energy

supply so as to compensate for said increased power losses during said temperature increase while maintaining said radius and hence said ionized mass's volume substantially constant during this subsequent stage of heating beyond said initial temperature.

4,448,744

METHOD OF LOADING AND/OR UNLOADING A NUCLEAR REACTOR, AND SUPPORT MEMBER, ESPECIALLY FOR THE FOREGOING METHOD

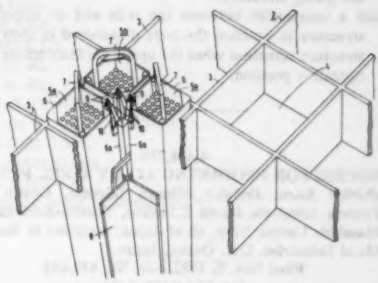
Ludwig Karger, Frankfurt, and Hans-Joachim Lippert, Erlangen, both of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mulheim an der Ruhr, Fed. Rep. of Germany

Filed Jul. 21, 1981, Ser. No. 285,577

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1980, 3027562; Nov. 26, 1980, 3044570

Int. Cl.³ G21C *3/30*

U.S. Cl. 376—262 **21 Claims**



1. Method of loading or unloading or both loading and unloading a nuclear reactor wherein control rods of cruciform cross section are at least partly withdrawn, each of the control rods being associated with a respective group of four fuel assemblies respectively having elongated duct tubes of rectangular cross section and being disposed in respective corners of a rectangular mesh of a transverse support grid, the duct tubes forming therebetween a gap-shaped intermediate space of cruciform cross section for accommodating a respective one of the control rods of cruciform cross section, which comprises, prior to withdrawing a respective control rod associated with the respective group of four fuel assemblies, unloading from the nuclear reactor at least one of the four fuel assemblies of the group thereof, and inserting a support member into the respective mesh so as to fix in the respective corners of the mesh the ends of two diagonally opposed fuel assemblies of the group remaining in the nuclear reactor.

4,448,745

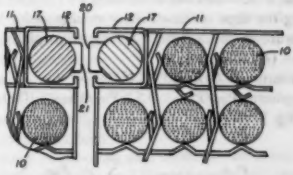
LATERAL SUPPORT FOR NUCLEAR FUEL ASSEMBLIES

Andrew J. Anthony, Tariffville, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Apr. 5, 1982, Ser. No. 365,753

Int. Cl.³ G21C *3/30*

U.S. Cl. 376—448 **7 Claims**



1. An assembly of nuclear fuel rods arranged in the path of water to be heated, including,

a framework for vertically supporting an assembly of nuclear fuel rods and having a square cross section,

a tube mounted at each corner of the framework in parallel with the fuel rods of the assembly,

at least one aperture in the wall of each corner tube directed toward the external surface of a corner tube of an adjacent fuel assembly,

spring structure mounted within each corner tube actuatable to extend through at least one of the tube apertures into loading engagement with the external surface of the corner tube of the adjacent fuel assembly,

a rod extended down each corner tube in engagement with the spring structure mounted within the tube to actuate the spring structure,

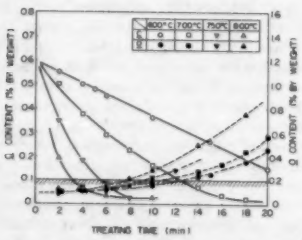
and a connection between the rods and an upper guide structure to position the rods downward in their spring structure actuation when the upper guide structure is in its operative position.

4,448,746

PROCESS FOR PRODUCING ALLOY STEEL POWDER

Toshihiko Kubo, Ibaraki; Minoru Ichidate, Ohtsu; Eijiro Tamura, Hirakata; Isamu Karasuno, Yamato-Koriyama, and Masahide Umino, Nara, all of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Filed Nov. 5, 1982, Ser. No. 439,432
Int. Cl.³ B22F *1/00*
U.S. Cl. 419—31 **17 Claims**



1. A process for producing low-oxygen, low-carbon alloy steel powder, which comprises the steps of:

preparing molten steel which contains at least one easily oxidizable element selected from the group consisting of chromium, manganese, vanadium, niobium, boron and silicon;

atomizing said molten steel by means of an atomizing agent containing a non-oxidizing medium to provide as-atomized alloy steel powder containing 0.2% by weight or less of oxygen and 0.1% by weight or more of carbon;

adjusting the amount of carbon of said as-atomized alloy steel powder by maintaining it in a decarburizing atmosphere containing at least H_2 and H_2O gases under either of the below-defined conditions (A) or (B); and

cooling the thus obtained alloy steel powder to room temperature in an inert or reducing atmosphere.

Condition (A):

Temperature (t°C.): 600° C.≦t≦950° C.

Atmosphere (P_{H2}/P_{H2O}): $0.5 \leqq P_{H2}/P_{H2O} \leqq 1000$

Treating Time (θ minute):

$$1.1 \times 10^{-3} \exp\left[\left(\frac{13126}{1.987(t+273)}\right)\left(\frac{P_{H_2}}{P_{H_2O}}\right)^{0.667}\right] \leqq$$

-continued

$$\theta \leqq \{0.101 + (1.0 - 1.0038 \times 10^{-3}t)\}\left(\frac{P_{H_2}}{P_{H_2O}}\right)^{1.341}$$

Condition (B):

Temperature (t°C.): 950° C.<t≦1250° C.

Atmosphere (P_{H2}/P_{H2O}): $P_{H2}/P_{H2O} \geqq 0.5$

Treating Time (θ minute):

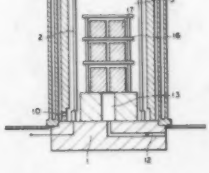
$$\theta \geqq 1.1 \times 10^{-3} \exp\left(\frac{13126}{1.987(t+273)}\right)\left(\frac{P_{H_2}}{P_{H_2O}}\right)^{0.667}$$

4,448,747

HIGH DENSITY SINTERING METHOD FOR POWDER MOLDED PRODUCTS

Masato Moritoki, Miki; Takao Fujikawa, and Junichi Miyanaga, both of Kobe, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Sep. 1, 1982, Ser. No. 413,836
Claims priority, application Japan, Sep. 1, 1981, 56-138012
Int. Cl.³ B22F *3/14, 3/16*
U.S. Cl. 419—49 **10 Claims**



1. A high density sintering method for powder molded products by applying preliminary sintering to powder molded products previously molded into a predetermined shape and then applying a hot isostatic press process to said sintered products thereby producing high density sintered products and utilizing a high pressure vessel, a movable heating furnace equipped with at least one heating means and having a heat insulating structure and an atmosphere chamber, which comprises:

loading said powder molded products into said movable heating furnace;

introducing said heating furnace into said atmosphere chamber;

applying preliminary sintering to said powder molded products in said heating furnace by said at least one heating means while simultaneously conditioning the inside of said atmosphere chamber with a vacuum or predetermined gas atmosphere;

subsequently removing said heating furnace from said atmosphere chamber while maintaining the inside of the furnace at a high temperature so that heat energy losses are minimized and directly introducing said furnace into said high pressure vessel;

thereafter applying said hot isostatic press process to the sintered products in said furnace while charging a gas as a pressure medium under pressure into said high pressure vessel and elevating the temperature in said heating fur-

nace by said at least one heating means to thereby produce high density sintered products; and

removing said heating furnace together with the high density sintered products loaded therein from the high pressure vessel after completion of said hot isostatic pressure process.

6. A high density sintering method for powder molded products by applying preliminary sintering to powder molded products previously molded into a predetermined shape and then applying a hot hydrostatic press process to said sintered products thereby producing high density sintered products, utilizing a plurality of movable heating furnaces each equipped with least one heating means and heating a heat insulating structure and at least one atmosphere chamber and a high pressure chamber, and which repeats the successive steps of loading said powder molded products into the first heating furnace, which comprises:

introducing said heating furnace into the at least one atmosphere chamber;

applying preliminary sintering to the powder molded products in said first heating furnace by said at least one heating means while conditioning the inside of said at least one atmosphere chamber to a vacuum or predetermined gas atmosphere;

subsequently removing said heating furnace from said at least one atmosphere chamber while maintaining the inside of the furnace at a high temperature so that heat energy lossess are minimized and directly introducing said furnace into the high pressure vessel;

thereafter applying said hot isostatic press process to said sintered products in said heating furnace while charging a gas as a pressure medium under pressure into said high pressure vessel and elevating the temperature in said heating furnace by said at least one heating means, while, on the other hand, introducing a second heating furnace loaded with said powder molded products into said at least one atmosphere chamber and applying the preliminary sintering to said powder molded products in the same manner as above in the course of said hot isostatic press process, and introducing the second heating furnace while maintaining the inside of the furnace at a high temperature so that heat energy losses are minimized into said high pressure vessel from which said first heating furnace has been removed after completion of said hot isostatic press process.

4,448,748

ZINC-ALUMINUM ALLOYS AND COATINGS

Schrade F. Radtke, New Canaan, Conn.; Dimitri Coutsouradis, Liege, and Jacques Pelerin, Angleur, both of Belgium, assignors to International Lead Zinc Research Organization, Inc., New York, N.Y.

Division of Ser. No. 245,172, Mar. 18, 1981, abandoned. This application Aug. 2, 1982, Ser. No. 404,405

Claims priority, application Belgium, Mar. 25, 1980, 882431; Jan. 16, 1981, 887121

Int. Cl.³ C22C *18/04*

U.S. Cl. 420—514 **25 Claims**

1. A protective metal coating adhered to a substrate, said coating comprising from about 85% to about 97% Zn, from about 4% to about 15% Al, and at least about 5 ppm of a rare earth-containing alloy.

4,448,749

HEAT RESISTANT CAST IRON-NICKEL-CHROMIUM ALLOY

Junichi Sugitani, Hirakata; Teruo Yoshimoto, Suita, and Makoto Takahashi, Hirakata, all of Japan, assignors to Kubota Ltd., Osaka, Japan

Filed Sep. 17, 1982, Ser. No. 419,318

Claims priority, application Japan, Oct. 12, 1981, 56-162479

Int. Cl.³ C22C *30/00*

U.S. Cl. 420—584 **1 Claim**

1. A heat resistant cast iron-nickel-chromium alloy consisting essentially of the following components in the following proportions in terms of % by weight:

C: 0.3–0.6,
$0 < Si \leqq 2.0$,
$0 < Mn \leqq 2.0$,
Cr: 20–30,
Ni: 30–40,
Nb+Ta: 0.3–1.5,
N: 0.04–0.15,
B: 0.0002–0.004,
Ti: 0.04–0.50 and
$0.07 < Al \leqq 0.50$

the balance being substantially Fe.

4,448,750

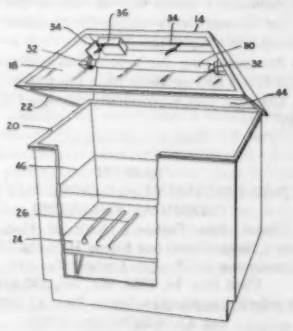
STERILIZATION METHOD

Michael L. Fuesting, 449 N. First St., Wood River, Ill. 62095

Continuation of Ser. No. 271,013, Jun. 5, 1981, abandoned. This application May 23, 1983, Ser. No. 495,922

Int. Cl.³ A61L *2/10, 2/18*

U.S. Cl. 422—20 **12 Claims**



1. A batchwise and static method of disinfecting and/or sterilizing small objects such as medical and dental instruments and the like comprising the steps of:

(a) contacting an object to be disinfected and/or sterilized with a stationary body of liquid or liquid solution which has a percent transmittance greater than twenty percent to ultraviolet radiation;

(b) exposing said object while contacted by said liquid to ultrasonic radiation;

(c) exposing said object while contacted by said liquid to ultraviolet radiation;

(d) said steps of exposing said object to ultrasonic radiation, ultraviolet radiation and liquid being performed simultaneously; and

(e) said liquid being relatively chemically stable at the temperature employed and under the ultraviolet and ultrasonic energy conditions employed.

4,448,751

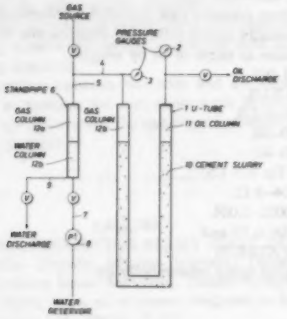
APPARATUS FOR TESTING A NITROGEN-GAS-STABILIZED CEMENT

Edwin A. Richardson, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Division of Ser. No. 227,027, Jan. 21, 1981, Pat. No. 4,333,764. This application Nov. 10, 1981, Ser. No. 319,848

Int. Cl.³ G01N *7/00, 33/38*

U.S. Cl. 422—68 **2 Claims**



1. A cement slurry testing apparatus comprising:

a test chamber having a substantially rigid-walled generally tubular portion;

means for flowing a sample of cement slurry into the chamber so that it fills at least a transverse section of said tubular portion;

means for inflowing and pressurizing a gas within the chamber so that a body of gas contacts and presses against said inflowed cement slurry;

means including a pump for maintaining the so-positioned gas and cement slurry within the chamber at a selected pressure and temperature; and,

means for measuring the amount of said pressurized gas which flows into or away from the transverse section of said chamber that was initially occupied by the cement slurry.

4,448,752

LIQUID DISTRIBUTING DEVICE FOR USE IN CHEMICAL ANALYZER

Taiichi Banno; Ryo Fujimori, both of Hachioji; Hiroshi Takekawa, Sagamihara, and Kazuo Hijikata, Hachioji, all of Japan, assignors to Olympus Optical Co., Ltd., Japan

Filed Dec. 14, 1981, Ser. No. 330,449

Claims priority, application Japan, Dec. 12, 1980, 55-175490

Int. Cl.³ G01N *1/14, 35/08*

U.S. Cl. 422—81 **18 Claims**

1. A distributing device for delivering a given amount of liquid from a first vessel into a second vessel, comprising:

a probe, said probe having a tip and being selectively immersed in said first vessel for removing said given amount of liquid therefrom;

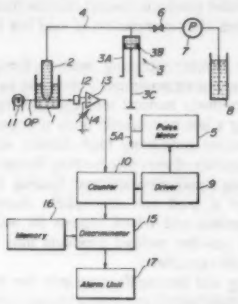
pumping means connected to said probe for aspirating and discharging said given amount of liquid through said probe;

means for driving said pumping means;

means for detecting an amount of liquid remaining in said first vessel and producing a liquid detection signal when said amount of liquid remaining in said first vessel is at a predetermined level corresponding to the proximity of the tip of the probe when immersed in said first vessel;

means for receiving said liquid detection signal to produce a first signal representative of an actual amount of liquid aspirated through the probe;

means for storing a second signal representing said given amount of liquid to be delivered; and



means for comparing said first and second signals with each other to produce a discrimination signal denoting that the actual amount of the aspirated liquid is not equal to the given amount to be delivered into the second vessel.

4,448,753

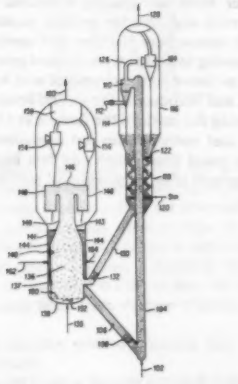
APPARATUS FOR REGENERATING CRACKING CATALYST

Benjamin Gross, Cherry Hill; James H. Haddad, Princeton Junction, and Madhava Malladi, West Deptford, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Feb. 12, 1982, Ser. No. 348,484

Int. Cl.³ B01J *8/26, 11/18*

U.S. Cl. 422—144 **9 Claims**



1. In a fluid catalytic cracking apparatus comprising a reactor vessel and a regenerator vessel, said reactor vessel comprising a reactor riser means and a separation means for separating products of a catalytic cracking reaction from spent catalyst, said regenerator vessel comprising a bed of spent catalyst, placed substantially in the center of said regenerator vessel, and a bed of regenerated catalyst, placed substantially concentrically about said bed of spent catalyst, a means of recycling at least a portion of said regenerated catalyst from said regenerated catalyst bed to said spent catalyst bed and a regenerating medium inlet conduit cooperating with a regenerating medium distribution means in the lower section of said spent catalyst bed, the improvement wherein:

said bed of spent catalyst is substantially completely separated from said bed of regenerated catalyst by a substantially annular wall means,

said bed of spent catalyst further comprises a riser in the upflow section of said bed of spent catalyst

said means of recycling at least a portion of said regenerated catalyst from said regenerated catalyst bed to said spent catalyst bed comprises at least one trickle valve means placed in said annular wall means.

4,448,754

MONOLITHIC CATALYST CATALYTIC CONVERTER WITH CATALYST HOLDING EXPANSIBLE RETAINER RING

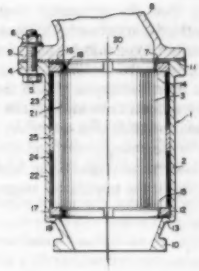
Kiyoshi Isogai; Nobuo Tobi; Itsuo Koga; Masahiko Takeuchi; Makoto Okamoto; Nobuo Ohmori, and Naka Takita, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Sep. 30, 1982, Ser. No. 428,663

Claims priority, application Japan, Aug. 31, 1982, 57-151459

Int. Cl.³ F01N *3/10*

U.S. Cl. 422—179 **15 Claims**



1. A monolithic catalytic converter, comprising:

a tubular casing which defines a cylindrical internal space therein and has first and second annular stepped portions which define first and second outer peripheral axial ends of said cylindrical internal space, respectively;

a monolithic catalyst body which is generally of a columnar shape and which has first and second axial ends;

first and second cushion rings, which are respectively engaged with said first and said second axial ends of said monolithic catalyst body; and

first and second retainer rings, said first retainer ring being engaged with a side of said first cushion ring remote from said monolithic catalyst body and said second retainer ring being engaged with a side of said second cushion ring remote from said monolithic catalyst body, said first retainer ring being freely rotatable relative to, but axially supported by, said first stepped portion of said casing and abuttingly supporting said monolithic catalyst body via said first cushion ring, and said second retainer ring being freely rotatable relative to, but axially supported by, said second stepped portion of said casing and abuttingly supporting said monolithic catalyst body via said second cushion ring,

at least one of said first and said second retainer rings being a substantially annular arcuate body with two opposite free ends thereof being arranged to be circumferentially movable relative to one another by at least such an amount accomodating circumferential thermal expansion of said retainer ring caused by a temperature rise thereof from a cold non-operating condition thereof to a hot operating condition thereof.

4,448,755

METHOD FOR REMOVAL OF TIN FROM AMMONIUM TUNGSTATES

Richard A. Scheithauer; Michael J. Miller; Martin B. MacInnis; James N. Christini, all of Towanda, and Martin C. Vogt, Monroeton, all of Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Dec. 1, 1983, Ser. No. 557,021

Int. Cl.³ C01G *41/00*

U.S. Cl. 423—56 **7 Claims**

1. A process for producing pure ammoniu.n paratungstate from ammonium tungstate solutions containing tin, said process comprising:

(a) adding a sulfide to said ammonium tungstate solutions to give an amount of a sulfide sufficient to form a complex with said tin,

(b) evaporating the ammonium tungstate solution containing the complexed tin at a sufficient temperature and to a reduced volume sufficient to form a two phase system in which the solid phase contains essentially all of the tungsten as ammonium paratungstate, and the liquid phase contains a majority of the tin and

(c) separating said solid phase from said liquid phase.

4,448,756

PROCESS FOR TREATMENT OF EXHAUST GASES

Robert H. Hammerle, Franklin, and Ching-Hsong Wu, Farmington Hills, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jan. 28, 1983, Ser. No. 461,819

Int. Cl.³ B01J *23/42, 23/44, 23/46;* B01D *53/36*

U.S. Cl. 423—213.7 **4 Claims**

1. In a process for treatment of exhaust gases from an internal combustion engine, the steps of:

burning a hydrocarbon fuel or a fuel containing hydrocarbons and alcohol blends in the internal combustion engine thereby to generate exhaust gases from the internal combustion engine containing various amounts of unburned hydrocarbons, carbon monoxide, and oxides of nitrogen depending upon operating conditions of the internal combustion engine; and

passing said generated exhaust gases over an improved catalyst system, characterized by;

a support medium for supporting a catalyst system, said support medium having both an upstream support portion over which exhaust gases initially flow and a downstream support portion over which exhaust gases flow after passing over said upstream support portion thereof;

finely divided palladium dispersed by itself on said upstream support portion of said support medium, said palladium being present in an amount of from about 10 to 40 grams per cubic foot of said upstream support portion of said support medium;

said downstream support portion of said support medium having a platinum/rhodium three-way catalyst thereon, said platinum to rhodium ratio being from about 11:1 to about 5:1 with said three-way catalyst material being present in an amount of from about 10 to 40 grams per cubic foot of said downstream support portion of said support medium.

4,448,757

PROCESS FOR REMOVING CONTAMINANTS FROM COMPRESSED AIR

James W. Barnwell, New Castle, and Ernest J. Breton, Wilmington, both of Del., assignors to Deltech Engineering, Inc., New Castle, Del.

Filed Apr. 26, 1982, Ser. No. 371,547

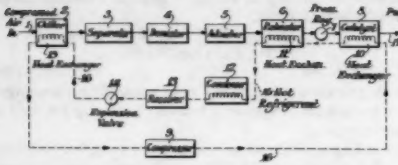
Int. Cl.³ B01D *53/34*

U.S. Cl. 423—247 **4 Claims**

1. A process for purifying compressed air used for human breathing comprising:

(a) cooling of the compressed air to condense water and other condensable vapors in the compressed gas,

(b) removing condensed water and other condensable vapors from the compressed air,



(c) reheating the compressed air to reduce its relative humidity to below 5%, and

(d) passing the reheated compressed air through one or more catalysts to convert carbon monoxide to carbon dioxide.

4,448,758

HYDROXYAPATITE, CERAMIC MATERIAL AND PROCESS FOR PREPARING THEREOF

Hirosi Nagai, Chofu, and Yasushi Nishimura, Tokyo, both of Japan, assignors to Kureha Kagku Kagyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 188,832, Sep. 19, 1980, Pat. No. 4,330,514. This application Nov. 4, 1981, Ser. No. 318,020

Claims priority, application Japan, Sep. 25, 1979, 54-123000

Int. Cl.³ C01B *25/32*

U.S. Cl. 423—308 **1 Claim**

1. A filtered, dried cake of hydroxyapatite having a structure possessing the three-dimensional order with an average opening radius of 50 to 150 Å and a pore cavity of 0.2 to 0.8 cm^3/g, said cake comprising, hydroxyapatite having an atomic ratio of calcium to phosphorus of 1.67 to 1.69 and a dimension including a length of 150 to 1200 Å, a width of 50 to 400 Å, a ratio of said length to said width of 3 to 10.

4,448,759

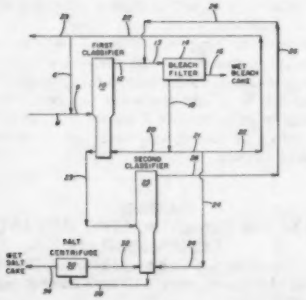
METHOD FOR SEPARATING PARTICULATE CALCIUM HYPOCHLORITE AND SODIUM CHLORIDE

Duk S. Chun, Uniontown; David A. Stermole, Bedford Heights, and Clifford E. Loehr, Norton, all of Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed May 3, 1982, Ser. No. 374,132

Int. Cl.³ C01B *11/06*

U.S. Cl. 423—474 **18 Claims**



1. In the process of producing calcium hypochlorite wherein an aqueous slurry of calcium hypochlorite particles and larger separable sodium chloride crystals is produced and wherein the particles of calcium hypochlorite and crystals of sodium chloride are separated in a classification zone, the improvement which comprises:

(a) introducing aqueous slurry containing such calcium hypochlorite particles and larger sodium chloride crystals into a staged upward flow primary elutriator-classifier at about the midpoint of such classifier,

(b) introducing elutriating fluid comprising an aqueous solution substantially saturated with calcium hypochlorite and sodium chloride into the lowermost stage of said primary classifier,

(c) removing a first slurry in which the solid phase is predominantly calcium hypochlorite particles from the uppermost stage of said primary classifier,

(d) separating said first slurry into a wet cake of calcium hypochlorite solids and bleach mother liquor,

(e) removing from the lowermost stage of said primary classifier a second slurry in which the solid phase is predominantly sodium chloride crystals, and introducing second slurry into a staged upward flow secondary elutriator classifier at about the midpoint of such secondary classifier,

(f) introducing elutriating fluid comprising an aqueous solution substantially saturated with calcium hypochlorite and sodium chloride into the lowermost stage of said secondary classifier,

(g) removing from the uppermost stage of said secondary classifier a third slurry in which the solid phase is predominantly calcium hypochlorite particles, and

(h) removing from the lowermost stage of said secondary classifier a fourth slurry in which the solid phase is predominantly sodium chloride crystals, the diameter of the stages of said primary and secondary elutriator-classifiers increasing in ascending order, and the upward fluid velocity in the lowermost stages being higher than the upward fluid velocity in the uppermost stages.

4,448,760

CONTINUOUS PROCESS FOR THE PREPARATION OF MANGANITE, MNOOH

Jay Y. Welsh, Catonsville; Denis F. DeCraene, Elkridge, and Irving Sochol, Baltimore, all of Md., assignors to Chemetals Incorporated, Baltimore, Md.

Filed Sep. 30, 1982, Ser. No. 428,540

Int. Cl.³ C01G *45/02*

U.S. Cl. 423—605 **8 Claims**

1. A continuous process for preparing alkali and alkaline-earth free manganite, comprising the steps of:

continuously feeding a first decomposition tank with an aqueous solution containing manganese (II) nitrite,

contacting said aqueous manganese (II) nitrite solution in said first decomposition tank with an active surface to promote the formation of manganite,

maintaining said aqueous manganese (II) nitrite solution in said first decomposition tank at a temperature sufficient to effect formation of manganite,

decomposing approximately 80% to 95% of the manganese (II) nitrite in said aqueous manganese (II) nitrite solution to form manganite,

continuously transferring said aqueous manganese (II) nitrite solution containing manganite to a second decomposition tank,

maintaining said aqueous manganese (II) nitrite solution containing manganite in said second decomposition tank at a temperature sufficient to effect formation of manganite, and

decomposing the remaining manganese (II) nitrite in said aqueous manganese (II) nitrite solution to form manganite.

4,448,761

PREPARATION OF ACICULAR, FERRIMAGNETIC IRON OXIDES

Wilhelm Sarnecki, Limburgerhof; Jenoe Kovacs, Bobenheim-Roxheim; Werner Loeser, Ludwigshafen; Peter Rudolf, Neuhofen, and Guenter Vaeth, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 20, 1982, Ser. No. 435,369

Claims priority, application Fed. Rep. of Germany, Nov. 5, 1981, 3143870

Int. Cl.³ C01G *49/08*

U.S. Cl. 423—632 2 Claims

1. A process for the preparation of an acicular ferrimagnetic iron oxide comprising reducing iron (III) oxide hydroxide consisting essentially of lepidocrocite, at from 350° to 600° C., by means of an organic compound which is decomposable within this temperature range in the presence of iron oxide, to give magnetite, wherein the organic compound employed for the reduction is a synthetic polymer having a molecular weight of from 3,000 to 40,000, used in an amount of from 0.8 to 15% by weight, based on the iron oxide hydroxide and selected from the group consisting of polyethylenes, polypropylenes, polyesters, polyethers, nylons and polycarbonates.

4,448,762

COMPLEX OF TRANSFERRIN WITH RUTHENIUM FOR MEDICAL APPLICATIONS

Powell Richards, Bayport; Suresh C. Srivastava, Setauket, and George E. Meinken, Middle Island, all of N.Y., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 3, 1980, Ser. No. 203,194

Int. Cl.³ A61K *49/00, 43/00*

U.S. Cl. 424—1.1 9 Claims

7. A method for diagnostic tumor scanning which comprises the intravenous administration of a tumor localizing agent, said tumor localizing agent being a mono- or di- metal complex of monomeric transferrin with radioactive ruthenium, with subsequent imaging of the tumor.

4,448,763

ALTERATION OF GALLIUM BIODISTRIBUTION USING INDIUM COMPLEXES FOR ENHANCED EARLY IMAGING

John W. Triplett, Lexington, Ky., assignor to The University of Kentucky Research Foundation, Lexington, Ky.

Filed Nov. 10, 1980, Ser. No. 205,423

Int. Cl.³ A61K *43/00, 49/00*

U.S. Cl. 424—1.1 24 Claims

8. A method for detecting tumors in mammals comprising: administering to said mammals an effective tumor imaging amount of radioactive gallium and an effective tumor imaging improving amount of non-radioactive indium and measuring the biodistribution of said radioactive gallium using external scintigraphic techniques.

4,448,764

DIRECT-ACTING IODINATING REAGENT

Paul K. Smith, and Dennis C. Klenk, both of Roscoe, Ill., assignors to Pierce Chemical Company, Rockford, Ill.

Filed Jul. 6, 1982, Ser. No. 395,805

Int. Cl.³ A61K *43/00, 49/00*

U.S. Cl. 424—1.1 13 Claims

1. The process of making a reagent useful for the direct iodination of a biological specimen comprising reacting, in an aqueous medium, sodium iodide with an oxidant comprised of a water insoluble suppot having covalently attached to its surface molecules containing a chloramine group and recovering the support from said aqueous medium, said reaction being such that iodous ions are complexed onto the support but are free to react with groups susceptible to iodination in proteins and be transferred to the specimen being iodinated.

2. The reagent prepared by the process of claim 1.

4,448,765

LIPOSOMES AND THEIR USE IN TREATING HUMAN OR OTHER MAMMALIAN PATIENTS

Philip S. Ash, Colchester, and Robert C. Hider, St. Osyth, both of England, assignors to National Research Development Corporation, London, England

Filed Jul. 3, 1979, Ser. No. 54,649

Claims priority, application United Kingdom, Jul. 3, 1978, 28612/78

Int. Cl.³ A01N *25/28;* A61J *3/07;* A61K *9/58;* B32B *9/02*

U.S. Cl. 424—14 20 Claims

1. Liposomes incorporating a polymer having aliphatic lipophilic groups with a chain of at least six atoms attached to the backbone thereof and having a molecular weight of from 2,000 to 50,000 wherein the proportion of polymer to the lipid content of the liposomes is in a range from 1 part by weight of the polymer to from 10 to 1,000 parts by weight of the lipid.

15. A composition comprising liposomes according to claim 1 incorporating a physiologically active substance.

4,448,766

DENTIFRICE COMPOSITION

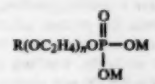
Anthony J. Morton, Ashton-under-Lyne, England, assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 373,208, Apr. 29, 1982. This application Oct. 27, 1983, Ser. No. 545,987

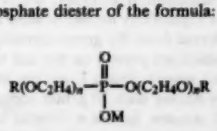
Int. Cl.³ A61K *7/16, 7/18*

U.S. Cl. 424—52 7 Claims

1. A toothpaste dentifrice composition consisting essentially of a non-toxic amount of a water-soluble monofluorophosphate, about 40–60% by weight of a polishing material consisting essentially of a calcium salt member selected from the group consisting of dicalcium phosphate as the single calcium salt polishing material and calcium salt polishing material of at least half by weight of dicalcium phosphate with a member selected from the group consisting of calcium carbonate, calcium pyrophosphate, tricalcium phosphate and calcium polymetaphosphate and about 0.5–5% by weight of a water-soluble surface active material consisting essentially of a non-cationic surface active agent, the said non-cationic surface active agent containing an anionic phosphate ester mixture in an amount of at least about 0.1% by weight of the said dentifrice, the said anionic phosphate ester mixture being a mixture of an anionic phosphate monoester of the formula:



and anionic phosphate diester of the formula:



wherein R represents an alkyl group of 10–20 carbon atoms, n is an integer from 1 to 6 and M represents a member selected from the group consisting of a hydrogen atom of an alkali metal cation or an ammonium group, wherein said anionic phosphate mixture improves the retention of soluble fluorine in said dentifrice.

4,448,767

PREPARATION OF MONOSPECIFIC MALE-SPECIFIC ANTIBODY AND THE USE THEREOF FOR INCREASING THE PERCENTAGE OF MAMMALIAN OFFSPRING OF EITHER SEX

Bernard J. Bryant, Davis, Calif., assignor to Sumar Corporation, Foster City, Calif.

Continuation-in-part of Ser. No. 841,207, Oct. 11, 1977, Pat. No. 4,191,749. This application Feb. 15, 1980, Ser. No. 117,341

Int. Cl.³ A61K *39/00, 35/48*

U.S. Cl. 424—85 **7 Claims**

1. A process for separating male and female determining sperm from native semen which comprises:

(a) treating the native semen with excess mono-specific male-specific antibody free from male-specificity interfering antibodies and coupling reaction interfering proteins to form comjugates between the male determining sperm and the antibodies,

(b) coupling anti-immunoglobulin antibody capable of specifically binding said male-specific antibody to a solid phase immunoabsorbent substrate, said substrate having a form capable of being loaded into a separation column,

(c) loading a separation column with the conjugate of the solid phase immunoabsorbent and anti-immunoglobulin antibody,

(d) passing the treated semen containing male and female determining sperm through the column, whereby the male determining sperm and male-specific antibody conjugates are bound to the solid phase immunoabsorbent, while the female determining sperm passes out of the column, and

(e) separating out the male determining sperm from the column.

4,448,768

PROTECTION AGAINST DENTAL CARIES

Geoffrey Colman, Sevenoaks, and Roy R. B. Russell, Bromley, both of England, assignors to The Secretary of State for Social Services in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Continuation-in-part of Ser. No. 68,443, Aug. 21, 1979, abandoned. This application Sep. 18, 1981, Ser. No. 303,539

Claims priority, application United Kingdom, Sep. 1, 1978, 35383/78

Int. Cl.³ A61K *39/09;* **C12P** *21/00*

U.S. Cl. 424—92 **4 Claims**

1. A process for preparing an antigen preparation from bacteria of the species *Streptococcus mutans* comprising growing bacteria of the species *S mutans* in a culture medium to produce a cell culture, removing at least the cell walls from said cell culture to leave a protein solution, and separating the antigen preparation from the protein solution by a method of separation which comprises contacting the protein solution with an immobilized antibody, washing unwanted materials from the immobilized antibody and eluting the antigen preparation from the immobilized antibody, wherein the immobilized antibody has a specificity for one or more antigenic proteins which are selected from the group consisting of:

(A) proteins which are present on the cell walls of *Streptococcus mutans* genetic group I, are not extractable from said walls by boiling with 10 g/liter sodium dodecyl sulphate for 20 minutes, have a molecular weight of about 29,000, have an isoelectric point of about 4.1 to 4.5, on treatment with a proteolytic enzyme form no precipitin lines when tested by immunodiffusion against antiserum to sodium dodecyl sulphate extracted cells of *Streptococcus mutans* and do not cross-react with heart tissue; and

(B) proteins which react serologically with antibodies to proteins of group member A.

4,448,769

ESTER OF 1,1-DIOXOPENICILLANIC ACID, AND USE THEREOF AS β-LACTAMASE INHIBITOR

Shoji Ikeda, Ibaraki; Fumio Sakamoto, Osaka; Goro Tsukamoto, Toyonaka, and Shigeru Yamabe, Kobe, all of Japan, assignors to Kanebo Ltd., Tokyo, Japan

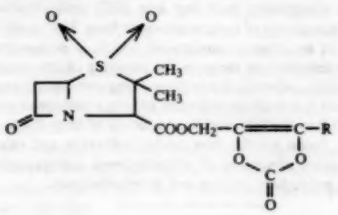
Filed Jul. 8, 1982, Ser. No. 396,471

Claims priority, application Japan, Jul. 15, 1981, 56-109275; Oct. 23, 1981, 56-168605

Int. Cl.³ C07D *499/00;* **A61K** *31/425*

U.S. Cl. 424—114 **6 Claims**

1. A 1,1-dioxopenicillanic acid ester represented by the following formula (I)



(I)

wherein R represents a methyl or phenyl group.

4,448,770

DIETETIC BEVERAGE

Elmer E. Epting, Jr., Newberry, S.C., assignor to Electroade, Inc., Newberry, S.C.

Filed Mar. 17, 1982, Ser. No. 358,845

Int. Cl.³ A61K *31/70, 33/06, 33/14*

U.S. Cl. 424—153 **5 Claims**

1. A beverage, essentially free of sodium ions, for consumption by humans to maintain the balance of body fluids during periods of fluid depletion or potassium depletion, comprising an aqueous solution, contain per gallon:

30–50 meq of potassium chloride

5–10 meq of calcium gluconate or glubionate calcium

1–3 meq of magnesium chloride

5–10 ounces of sucrose, and

provided further that the beverage composition contains no sodium ion except that present in minor amounts in flavoring agents, preservatives, or other minor additives.

4,448,771

FRUCTOSE-1,6-DIPHOSPHATE PREPARATION HAVING PROTECTIVE ACTION OF ERYTHROCYTE MEMBRANE IN PATIENTS UNDERGOING EXTRACORPOREAL CIRCULATION

Luciano Cattani, Bologna, and Renato Costrini, Rome, both of Italy, assignors to Biomedica Foscama Industria Chimico-Farmaceutica S.p.A., Rome, Italy

Filed Mar. 9, 1981, Ser. No. 242,128

Claims priority, application Italy, Mar. 12, 1980, 48137 A/80

Int. Cl.³ A61K *31/70*

U.S. Cl. 424—180 **1 Claim**

1. A method of treatment for patients undergoing extracorporeal circulation, comprising intravenously administered to said patents the pharmaceutical preparation comprising a 10% solution of fructose-1,6-diphosphate sodium salt in apyrogenic bidistilled water in effective doses not less than 2.5 ml/kg of body weight.

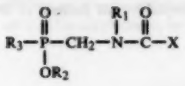
4,448,772

PHOSPHINYLMETHYLAMINOCARBONYL IMINO ACID COMPOUNDS USEFUL FOR TREATING HYPERTENSION

Donald S. Karanewsky, Princeton Junction, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

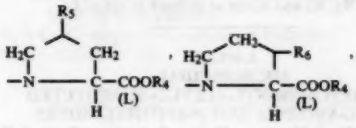
Filed Apr. 22, 1982, Ser. No. 371,033
Int. Cl.³ A61K 31/675; C07F 9/65
U.S. Cl. 424—200 15 Claims

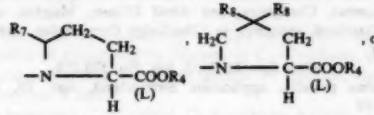
1. A compound of the formula

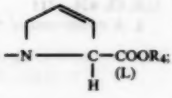


and a pharmaceutically acceptable salt thereof wherein:

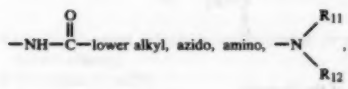
X is an imino acid of the formula

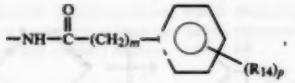


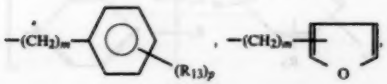


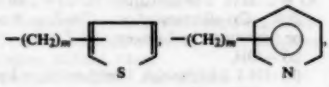


R_5 is hydrogen, lower alkyl, halogen, keto, hydroxy,

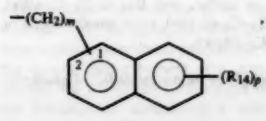








a 1- or 2-naphthyl of the formula



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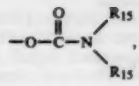
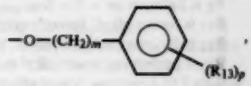
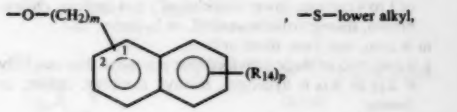
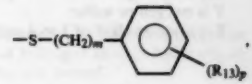


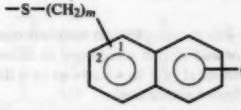


a 1- or 2-naphthyloxy of the formula

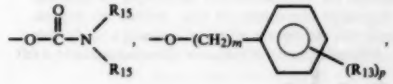




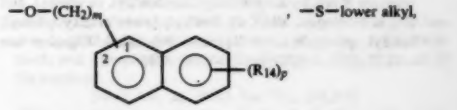
or a 1- or 2-naphthylthio of

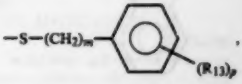


R_6 is keto, halogen,

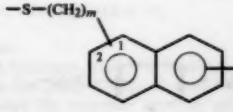


—O—lower alkyl, a 1- or

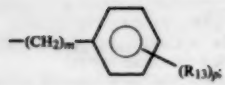




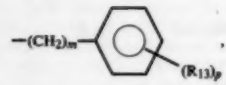
or a 1- or



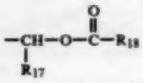
R_7 is keto or



R_8 is halogen or —Y—R_{16};
R_{11} is lower alkyl, benzyl, or phenethyl;
R_{12} is hydrogen, lower alkyl, benzyl or phenethyl;
R_{13} is hydrogen, lower alkyl or 1 to 4 carbons, lower alkoxy or 1 to 4 carbons, lower alkylthio of 1 to 4 carbons, chloro, bromo, fluoro, trifluoromethyl, hydroxy, phenyl, phenoxy, phenylthio, or benzyl;
R_{14} is hydrogen, lower alkyl of 1 to 4 carbons, lower alkoxy of 1 to 4 carbons, lower alkylthio of 1 to 4 carbons, chloro, bromo, fluoro, trifluoromethyl, or hydroxy;
m is zero, one, two, three or four;
p is one, two or three provided that p is more than one only if R_{13} or R_{14} is hydrogen, methyl, methoxy, chloro, or fluoro;
R_{15} is hydrogen or lower alkyl of 1 to 4 carbons;
Y is oxygen or sulfur;
R_{16} is lower alkyl of 1 to 4 carbons,

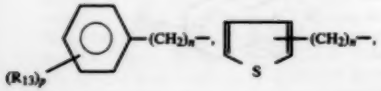


or the R_{16} groups join to complete an unsubstituted 5- or 6-membered ring or said ring in which one or more of the carbons has a lower alkyl of 1 to 4 carbons or a di(lower alkyl of 1 to 4 carbons) substituent;
R_1 is hydrogen, lower alkyl, halo substituted lower alkyl, amino substituted lower alkyl, benzyl, or phenethyl;
R_2 and R_4 are independently selected from the group consisting of hydrogen, lower alkyl, benzyl, benzhydryl, and



wherein R_{17} is hydrogen, alkyl, cycloalkyl, or phenyl, and R_{18} is hydrogen, alkyl, cycloalkyl, lower alkoxy, phenyl, benzyl, phenethyl, or R_{17} and R_{18} taken together are —$(CH_2)_2$—, —$(CH_2)_3$—, —CH=CH—, or

and
R_3 is alkyl, halo substituted lower alkyl, amino substituted lower alkyl, cycloalkyl-$(CH_2)_n$-,



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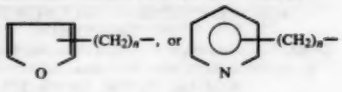
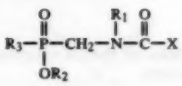


wherein R_{13}, m and p are as defined above and n is zero or an integer from 1 to 7.

14. A composition useful for treating hypertension comprising a pharmaceutically acceptable carrier and a hypotensive agent or pharmaceutically acceptable salt thereof of the formula



wherein R_1, R_2, R_3 and X are as defined in claim **1**.

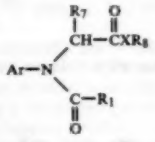
4,448,773

MICROBICIDAL N-ALKOXYCARBONYL-ALKYL-N-SUBSTITUTED ACETYL-ANILINES AND -NAPHTHYLAMINES

Peter Riebli, Basel; Hanspeter Fischer, Bottmingen; Rudolph C. Thummel, Courgenay, and Adolf Hübele, Magden, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

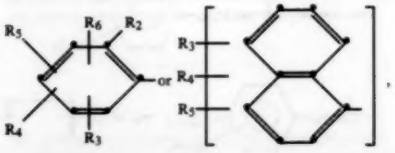
Filed Apr. 22, 1982, Ser. No. 370,759
Claims priority, application Switzerland, Apr. 29, 1981, 2783/81
Int. Cl.[3] **A01N** *37/46*; **C07C** *103/365, 103/37, 103/38*
U.S. Cl. 424—211 **13 Claims**

1. A compound of the formula I



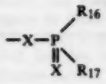
(I)

wherein
Ar is a group of the formula



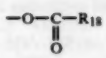
R_1 is 2-furyl, 2-tetrahydrofuryl, C_2–C_4-alkenyl, cyclopropyl, β-(C_1–C_4)-alkoxyethyl or —CH_2Z, each being unsubstituted or substituted by halogen, and Z being
(a) —OH,
(b) -1H-1,2,4-triazolyl, 1-imidazolyl or 1-pyrazolyl,
(c) —$S(O)_n$—R_{13}
where R_{13} is C_1–C_4-alkyl, and n is 1 or 2,
(d) —X—R_{14}
where X is oxygen or sulfur, and R_{14} is C_1–C_6-alkyl, C_3–C_4-alkenyl or C_3–C_4-alkynyl, each unsubstituted or substituted by C_1–C_2-alkoxy,
(e) —OSO_2—R_{15}
where R_{15} is C_1–C_4-alkyl, or mono- or di-(C_1–C_3)-alkylamine,

(f)



where X is oxygen or sulfur, R_{16} is C_1–C_4-alkyl, C_1–C_4-alkoxy or C_1–C_4-alkylamino, and R_{17} is C_1–C_4-alkoxy or C_1–C_4-alkylamino, or

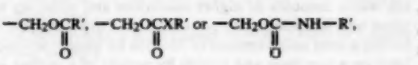
(g)



where R_{18} is C_1–C_3-alkyl which is unsubstituted or substituted by C_1–C_2-alkoxy,

R_2 is C_1–C_3-alkyl, C_1–C_3-alkoxy or halogen,

R_3 is $-CH_2OH$, $-N_3$,



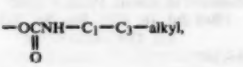
where R′ is C_1–C_6-alkyl or C_2–C_4-alkenyl, each unsubstituted or substituted by halogen or C_1–C_3-alkoxy, or it is unsubstituted or phenyl substituted by chlorine, and X is oxygen or sulfur,

R_4 is hydrogen, C_1–C_3-alkyl, C_1–C_3-alkoxy, halogen, $-NO_2$ or $-NH_2$,

R_5 is hydrogen or C_1–C_3-alkyl,

R_6 is hydrogen or C_1–C_3-alkyl,

R_7 is hydrogen, or C_1–C_2-alkyl which is unsubstituted or substituted by halogen, —OH, $—OC_1$—C_3-alkyl or



R_8 is C_1–C_4-alkyl which is unsubstituted or substituted by C_1–C_2-alkoxy,

X is oxygen or sulfur.

8. A composition for combating and/or preventing an infestation by harmful microorganisms, which composition contains as active ingredient at least one active substance according to claim 1 and an inert carrier.

4,448,774

STEROID FORMULATION

Emmett Clemente, Manchester, Mass.; Ho-Leung Fung, Getzville, N.Y., and Denise Brousseau, Andover, Mass., assignors to Fisons Corporation, Bedford, Mass.

Filed Dec. 22, 1982, Ser. No. 452,294

Int. Cl.³ C07J *7/00*; A61K *31/56*

U.S. Cl. 424—243 **20 Claims**

1. An aqueous pharmaceutical solution suitable for oral administration comprising as an active ingredient a steroid selected from the group consisting of prednisolone, prednisolone sodium phosphate, prednisone and methyl prednisolone, the steroid being present at a concentration of at least 0.3 mg/ml, the pH of the formulation being between 5 and 8 and the formulation containing a pharmaceutically acceptable preservative, a pharmaceutically acceptable chelating agent, and being substantially free of ethanol.

4,448,775

3-CARBAMOYLOXYMETHYLCEPHEM DERIVATIVES, AND ANTIBACTERIAL DRUGS CONTAINING SAME

Shigeto Negi, Tokyo; Yoshimasa Machida; Hiroshi Yamauchi, both of Ibaraki; Isao Saito, Tokyo; Yoshikazu Hasagawa, and Tamio Kawamura, both of Gifu, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

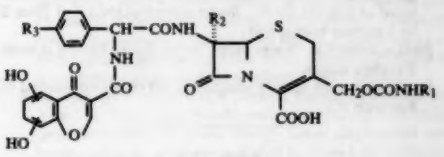
Filed Sep. 23, 1982, Ser. No. 422,440

Claims priority, application Japan, Sep. 29, 1981, 56-153009

Int. Cl.³ A61K *31/545*; C07D *501/34, 501/57*

U.S. Cl. 424—246 **5 Claims**

1. A compound of the formula:

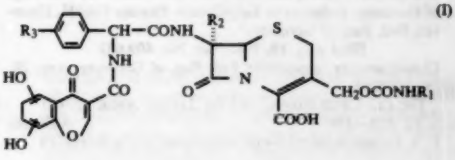


wherein R_1 represents trichloroacetyl, R_2 represents hydrogen or methoxy, and R_3 represents hydrogen atom or hydroxyl, or a pharmaceutically acceptable salt thereof.

5. An antibacterial composition comprising

(a) an antibacterially effective amount of a compound of the formula

(I)



wherein R_1 represents trichloroacetyl, R_2 represents hydrogen or methyl, and R_3 represents hydrogen or hydroxyl, or a pharmaceutically acceptable salt thereof; and

(b) a pharmaceutically acceptable carrier therefor.

4,448,776

METHOD OF USING CERTAIN SUBSTITUTED ALIPHATIC SECONDARY AMINES OR THEIR SALTS FOR EASING BREATHING

Karl Bucher, Wielandplatz 2, 5054 Basel; Max Matter, Lindenweg 3, 4052 Basel; Bernhard Brunner, Seegarten, 3626 Hünibach, and Alfred Frey, Obere Hauptgasse 8, 3600 Thun, all of Switzerland

Filed Jan. 20, 1982, Ser. No. 341,035

Claims priority, application Switzerland, Feb. 12, 1981, 939/81; May 10, 1981, 6376/81

Int. Cl.³ A61K *31/24, 31/135, 31/495*

U.S. Cl. 424—250 **21 Claims**

1. A method of easing the breathing activity of a warm-blooded organism suffering from respiratory disorders or being exposed to unfavourable respiratory conditions, comprising administering to the organism a breathing effectively easing amount of a compound of the formula

$$R_1—CH(R_2)—N(R_3)—R_4 \qquad (IC)$$

in which

R_3 is hydrogen, methyl or benzyl, and

R_4 is: the group $—alk_1—X—alk_2—R_5$, or

R_3 and R_4 together are the group $—alk_3—NH—alk_4$ wherein:

alk_1 and alk_2 are the same or different and are each lower alkylidene,

alk_3 and alk_4 are the same or different and are each ethylene

X is a direct bond, methylene or phenylene,
R_5 is: hydroxy, amino, or the group

$$-N(R_6)-CH(R_7)-R_8;$$

each of R_1 and R_8 being the same or a different one of the groups: phenyl or phenyl substituted by one of the substituents: methyl and halogen having an atomic number of at most 35, any such halogen substituent being in positions meta- or para- of the phenyl nucleus,
R_6 is hydrogen or lower alkyl, but at least one of R_3 and R_6 must be hydrogen;
R_2 and R_7 are the same or different and are each one of the following: hydrogen, lower alkyl, phenyl, phenyl substituted as defined for R_1, lower alkoxy-carbonyl of from 2 to 5 carbon atoms; and
groups defined as "lower alkyl" hereinbefore having at most 7 carbon atoms;
or of a pharmaceutically acceptable salt of the compound of Formula IC.

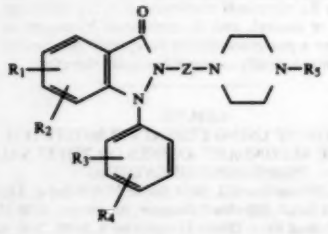
4,448,777

1-PHENYLINDAZOLE-3-ONE COMPOUNDS, PROCESS AND INTERMEDIATES FOR THEIR PREPARATION, AND PHARMACEUTICAL COMPOSITIONS CONTAINING SAME

Henning Heinemann, Hanover, Fed. Rep. of Germany; Daniel Jasserand, Paris, France; Wolfgang Milkowski, Burgdorf, Fed. Rep. of Germany; Dimitri Yavordios, Chatillon sur Chalaronne, France, and Horst Zeugner, Hanover, Fed. Rep. of Germany, assignors to Kali-Chemie Pharma GmbH, Hanover, Fed. Rep. of Germany

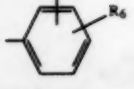
Filed Aug. 19, 1982, Ser. No. 409,632
Claims priority, application Fed. Rep. of Germany, Aug. 20, 1981, 3132916
Int. Cl.³ C07D *403/06, 487/00, 231/56;* **A61K** *31/495*
U.S. Cl. 424—250 **9 Claims**

1. A 1-phenylindazol-3-one compound of the formula I



I

where R_1 is a hydrogen or halogen atom, or a lower alkyl, lower alkoxy or trifluoromethyl, R_2 is a hydrogen or halogen atom, or a lower alkyl or lower alkoxy, R_3 is a hydrogen or halogen atom, or a lower alkyl, lower alkoxy or trifluoromethyl, R_4 is a hydrogen or halogen atom, or a lower alkyl or lower alkoxy, Z is an alkylene with 2 to 6 carbon atoms and R_5 is an unsubstituted pyridyl or a pyridyl which is monosubstituted by a halogen atom or a lower alkyl or lower alkoxy, a thienyl or an unsubstituted or substituted phenyl a



a

where R_6 is a hydrogen or halogen atom, or a lower alkyl, lower alkoxy, hydroxyl, trifluoromethyl or lower alkanoyloxy radical and R_7 is a hydrogen or halogen atom or a lower alkyl or lower alkoxy, or R_6 and R_7 are bonded to adjacent carbon atoms and together denote a methylenedioxy or ethylenedioxy; and acid addition salts thereof.

4,448,778

MALTITOL CONTAINING GEL BASE SYSTEMS

Matthew J. Lynch, Wilmington, Del., assignor to ICI Americas Inc., Wilmington, Del.

Division of Ser. No. 289,465, Aug. 3, 1981, Pat. No. 4,381,318, which is a continuation-in-part of Ser. No. 222,300, Jan. 5, 1981, Pat. No. 4,357,314. This application Jul. 7, 1982, Ser. No. 395,923
Int. Cl.³ A61K *31/485, 47/00*
U.S. Cl. 424—260 **4 Claims**

1. A non-crystallizing edible gel useful in formulating cosmetics, pharmaceuticals, confections and food specialties consisting essentially of an aqueous maltitol containing syrup resulting from the hydrogenation of maltose rich syrups which comprise 36–49% by weight maltitol, 11–14% by weight sorbitol, minor amounts of higher saccarides and reducing sugars when said ingredients are calculated on a dry basis said syrup having a total solids content of 75–85% by weight when calculated on a wet basis and 5–10% by weight of a gelling agent.

4. A composition of claim 1 useful as a gelled cough remedy which further comprises minor amounts of cough supressants, expectorants and antihistamines.

4,448,779

USE OF MS SALT IN GERIATRIC MEDICINE

Jean F. Blanchard, and Pierre P. Lasserre, both of Toulouse, France, assignors to Sanofi, Paris, France

Filed Jul. 16, 1981, Ser. No. 283,829
Int. Cl.³ A61K *31/44*
U.S. Cl. 424—263 **16 Claims**

1. A geriatric method which comprises administering orally to an aged person a composition which comprises a biologically acceptable carrier and as the active ingredient, 5-o-cyanobenzyl-4,5,6,7-tetrahydrothieno [3,2-c] pyridine methanesulfonate, in an effective amount, and alleviating symptoms of organic brain syndrome of that person.

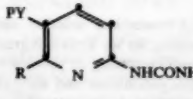
4,448,780

N-(LOWER-ALKYL)-N'-[5-(PYRIDINYL)-2-PYRIDINYL-]UREAS AND CARDIOTONIC USE THEREOF

George Y. Lesher, Schodack, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Filed Sep. 3, 1982, Ser. No. 414,602
Int. Cl.³ C07D *213/22;* **A61K** *31/44*
U.S. Cl. 424—263 **12 Claims**

1. N-R_1-N'-(6-R-5-PY-2-pyridinyl)urea having the formula



or an acid-adddition salt thereof, where R_1 is lower-alkyl, R is hydrogen or lower-alkyl, and PY is 4-pyridinyl or 3-pyridinyl, or 4-pyridinyl or 3-pyridinyl having one or two lower-alkyl substituents.

4,448,781

N-BENZYL-IMIDAZOLES AS SELECTIVE INHIBITORS OF THE THROMBOXANE SYNTHETASE ENZYME

Peter E. Cross, Canterbury, and Roger P. Dickinson, Dover, both of England, assignors to Pfizer Inc., New York, N.Y.

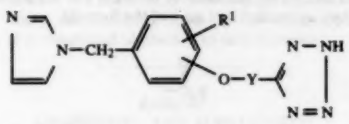
Division of Ser. No. 110,711, Jan. 9, 1980. This application Jul. 27, 1981, Ser. No. 286,808

Claims priority, application United Kingdom, Jan. 19, 1979, 7902114

Int. Cl.³ C07D *257/04;* A61K *31/41*

U.S. Cl. 424—269 **6 Claims**

1. A compound of the formula

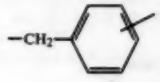


(I)

or a pharmaceutically acceptable acid addition salt thereof, wherein:

R^1 is hydrogen, C_1–C_4 lower alkyl, C_1–C_4 lower alkoxy or halogen; and

Y is $(CH_2)_n$ where n is an integer of from 1 to 4, or a group of the formula



6. A method of selectively inhibiting the action of the thromboxane synthetase enzyme in an animal which comprises administering to the animal a thromboxane synthetase inhibiting amount of a compound of claim 1 or of a pharmaceutical composition of claim 5.

4,448,782

2-(AMINO ACID-THIO)-2-PENEM-3-CARBOXYLIC ACIDS AND CONGENERS

Adriano Afonso, West Caldwell, N.J., assignor to Schering Corporation, Kenilworth, N.J.

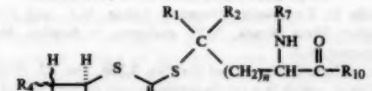
Continuation-in-part of Ser. No. 125,811, Feb. 28, 1980, abandoned. This application Oct. 30, 1981, Ser. No. 316,702

Claims priority, application European Pat. Off., Feb. 20, 1981, 81101210.3

Int. Cl.³ C07D *499/04;* A61K *31/425*

U.S. Cl. 424—270 **13 Claims**

1. A compound of the formula



wherein

n is 0 to 4;

R is hydrogen; an alkali metal cation; a quaternary ammonium cation or a metabolisable ester group;

R_1 and R_2 are independently hydrogen or lower alkyl;

R_4 is hydrogen, lower alkyl or a group of the formula

wherein:

R_5 is hydrogen; lower alkyl; phenyl; phenyl substituted by from 1 to 3 substituents independently selected from halogen, lower alkyl or lower alkoxy; lower alkyl substituted by phenyl or by phenyl substituted by from 1 to 3 substituents independently selected from halogen, lower alkyl or lower alkoxy; pyridyl; furanyl; thienyl; alkyl-substituted pyridyl, furanyl or thienyl; lower alkyl substituted by pyridyl, furanyl or thienyl; or lower alkyl substituted by lower alkyl-substituted pyridyl, furanyl or thienyl;

R_{10} is amino, loweralkylamino, an α-amino acid residue bonded through the α-nitrogen atom or OR_6;

R_6 is hydrogen; lower alkyl; phenyl; phenyl substituted by from 1 to 3 substituents independently selected from halogen, lower alkyl or lower alkoxy; lower alkyl substituted by phenyl or by phenyl substituted by from 1 to 3 substituents independently selected from halogen, lower alkyl or lower alkoxy groups; an alkali metal cation; a quaternary ammonium cation; or a metabolisable ester group;

R_7 is hydrogen; lower alkyl; phenyl; phenyl substituted by from 1 to 3 substituents independently selected from halogen, lower alkyl, or lower alkoxy; lower alkyl substituted by phenyl or by phenyl substituted by from 1 to 3 substituents independently selected from halogen, lower alkyl or lower alkoxy; phenylsulfonyl; phenylsulfonyl substituted by from 1 to 3 substituents independently selected from halogen, lower alkyl or lower alkoxy; methyl acetoacetyl; dihydroresorcinyl; dimedonyl; acetyl acetyl; a group

wherein R′ is phenyl or phenyl substituted by 1 to 3 lower alkyl, lower alkoxy or halogen groups, and R″ is hydrogen, lower alkyl or lower alkyl substituted by one or two phenyl or substituted phenyl groups, wherein the substituents on the phenyl are 1 to 3 halogen, lower alkyl or lower alkoxy groups; an amidine or guanidine group; or an acyl group of the formula

wherein:

R_8 is lower alkyl; lower alkoxy; phenoxy or substituted phenoxy; lower alkyl substituted by phenyl or by substituted phenyl; pyridyl; furanyl; thienyl; substituted pyridyl, furanyl or thienyl; lower alkyl substituted by pyridyl, furanyl or thienyl; lower alkyl substituted by substituted pyridyl, furanyl or thienyl; alkenyl or alkynyl of 2 to 6 carbon atoms; cycloalkyl of 4 to 6 carbon atoms; wherein the substituents are selected from 1 to 3 hydroxy, thio, alkylthio, lower alkyl, lower alkoxy, halogen, cyano, carboxy, nitro, amino, amino lower alkyl or halo-lower alkyl groups.

4,448,783

SUBSTITUTED PYRAZOLINE, AND ITS USE IN TREATMENT OF GASTRO-INTESTINAL DISTURBANCES

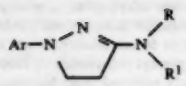
Marvin I. Siegel, Chapel Hill, N.C., assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

Filed May 17, 1982, Ser. No. 378,514

Int. Cl.³ A61K *31/415*

U.S. Cl. 424—273 P **20 Claims**

1. A method of treatment or prophylaxis of secretory diarrhea in a mammal, including man, comprising the administration to said mammal of a non-toxic effective anti-secretory diarrheal amount of a compound of formula (I)



(I)

wherein

Ar is 3-trifluoromethylphenyl,

R is hydrogen and

R^1 is selected from hydrogen and lower alkyl having 1 to 6 carbon atoms, or a pharmaceutically acceptable salt thereof.

4,448,784

1-(AMINOALKYLPHENYL AND AMINOALKYLBENZYL)-INDOLES AND INDOLINES AND ANALGESIC METHOD OF USE THEREOF

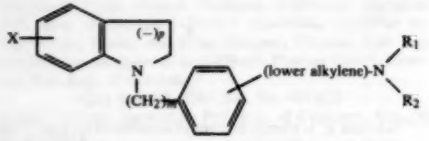
Edward J. Glamkowski, Warren, N.J., and James M. Fortunato, North Wales, Pa., assignors to Hoechst-Roussel Pharmaceuticals, Inc., Somerville, N.J.

Filed Apr. 12, 1982, Ser. No. 367,707

Int. Cl.³ A61K *31/405;* **C07D** *209/08*

U.S. Cl. 424—274 **31 Claims**

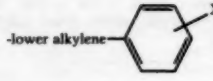
1. A compound having the formula



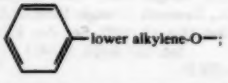
where R_1 and R_2 are the same or different and are hydrogen, lower alkyl, cycloalkyl and acyl of the formula

where R_3 is lower alkyl, lower alkoxy, cycloalkyl, phenyl of the formula

and Ar lower alkyl of the formula

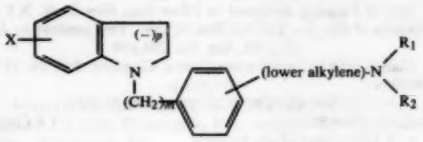


X is hydrogen, halogen, lower alkoxy, Ar lower alkoxy of the formula



m and p are independently an integer of 0 or 1 and the pharmaceutically acceptable acid addition salts thereof.

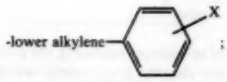
31. A method of alleviating pain in a mammal which comprises administering to a mammal a pain alleviating amount of a compound of the formula



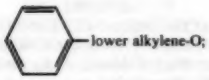
where R_1 and R_2 are the same or different and are hydrogen, lower alkyl, cycloalkyl and acyl of the formula

where R_3 is lower alkyl, lower alkoxy, cycloalkyl, phenyl of the formula

and Ar lower alkyl of the formula



X is hydrogen, halogen, lower alkoxy and Ar lower alkoxy of the formula



m and p are independently an integer of 0 or 1 and the pharmaceutically acceptable acid addition salts thereof.

4,448,785

N-UNSATURATED FATTY ACID AMIDES OF TRYPTOPHAN ESTER HOMOLOGUES AND ANTI-CHOLESTERIC USE THEREOF

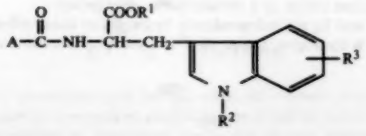
Faizulla G. Kathawala, Mountain Lakes, N.J., and John G. Heider, West Nyack, N.Y., assignors to Sandoz, Inc., E. Hanover, N.J.

Continuation-in-part of Ser. No. 5,355, Jan. 22, 1979, abandoned, which is a continuation-in-part of Ser. No. 867,813, Jan. 9, 1978, abandoned. This application Jun. 24, 1982, Ser. No. 391,548

Int. Cl.³ C07D *209/20;* **A61K** *31/405*

U.S. Cl. 424—274 **30 Claims**

1. A compound of the formula



wherein

R^1 is alkyl having from 1 to 8 carbon atoms or benzyl

R^2 is a hydrogen atom, alkyl having from 1 to 3 carbon atoms or benzyl;

R^3 is a hydrogen atom, halo having an atomic weight of from about 19 to 80, alkyl having from 1 to 3 carbon atoms, or alkoxy having from 1 to 3 carbon atoms;

A is the residue of an unsaturated long-chain fatty acid minus the carboxylic portion, said acid having from 8 to 24 carbon atoms and having from 1 to 4 ethylenically unsaturated positions.

14. A method of controlling the cholesterol ester content of an arterial wall, in a mammal in need of such treatment, comprising orally administering a cholesterol ester-controlling amount of a compound of claim 1 to said mammal.

4,448,786

4-NAPHTHYL AND SUBSTITUTED NAPHTHYL-3-HYDROXY-3-PYRROLINE-2,5-DIONES AND THEIR USE AS INHIBITORS OF GLYCOLIC ACID OXIDASE

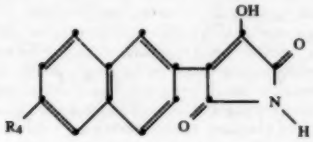
Edward J. Cragoe, Jr., Lansdale; Clarence S. Rooney, Worcester, both of Pa., and Haydn W. R. Williams, Dollard des Ormeaux, Canada, assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 91,293, Nov. 5, 1979, Pat. No. 4,349,561. This application Jun. 25, 1982, Ser. No. 392,191

Int. Cl.³ C07D *207/416, 405/10;* **A61K** *31/40*

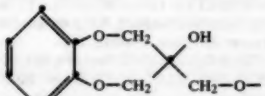
U.S. Cl. 424—274 **3 Claims**

1. The compounds having the structural formula:



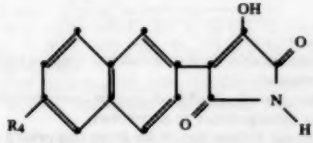
wherein

R_4 is hydrogen, halogen, loweralkyl having 1 to 6 carbon atoms or



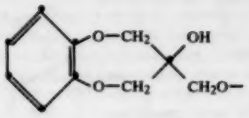
or a pharmaceutically acceptable salt thereof.

3. A method of treating or preventing the formation of calcium oxalate kidney or bladder stones which comprises administering to a patient with or prone to renal lithiasis an effective amount of a compound having the structural formula:



wherein

R_4 is hydrogen, halogen, loweralkyl having 1 to 6 carbon atoms or



or a pharmaceutically acceptable salt thereof.

4,448,787

6-SUBSTITUTED PYRANONE COMPOUNDS AND THEIR USE AS PHARMACEUTICALS

Barry P. Clark, Fleet; William J. Ross, Lightwater, and Alec Todd, Wokingham, all of England, assignors to Lilly Industries Limited, London, England

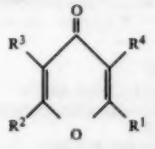
Division of Ser. No. 134,135, Mar. 27, 1981, Pat. No. 4,304,728. This application Sep. 17, 1981, Ser. No. 303,297

Claims priority, application United Kingdom, Apr. 5, 1979, 7912062

Int. Cl.³ A61K *31/35*

U.S. Cl. 424—283 **6 Claims**

3. A method of treating an animal, including a human, susceptible to or suffering from an immediate hypersensitivity condition of the type represented by asthma, which comprises administering an effective amount of a compound of the formula



in which R^1 is $COOR^5$, $CONHR^5$, cyano, 5-tetrazolyl or R^6, where R^5 is hydrogen or C_{1-8} alkyl and R^6 is phenyl or naphthyl, the phenyl or naphthyl group being optionally substituted by one or more groups selected from halogen, C_{1-6} alkyl, C_{1-4} alkoxy, hydroxy, benzyloxy, nitro, trifluoromethyl, carboxyl, C_{1-4} alkylsulphinyl, C_{1-4} alkylsulphonyl, $N(R^5)_2$, $NHCOR^5$ and SR^5; R^2 is R^6 or $-CH{=}CH-R^6$ when R^1 is $COOR^5$, $CONHR^5$, cyano or 5-tetrazolyl, or R^2 is $-CH{=}CH-R^6$ when R^1 is R^6; R^3 is hydrogen, C_{1-6} alkyl, halogen, hydroxy or $-OCH_2R^6$; and R^4 is hydrogen, C_{1-6} alkyl or halogen; or a pharmaceutically-acceptable salt therefor.

4,448,788

11-DEOXOGLYCYRRHETINIC ACID HYDROGEN MALEATE, PROCESS FOR ITS PRODUCTION, AND ITS USE AS A MEDICINE

Shigeshi Toyoshima, Tokyo; Hajime Fujimura, Kyoto; Shunsuke Ito, and Yasuji Kondo, both of Hiroshima, all of Japan, assignors to Maruzen Pharmaceutical Co., Ltd., Hiroshima, Japan

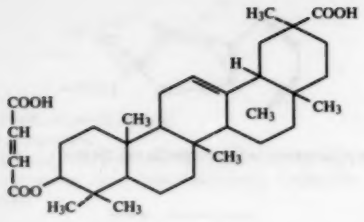
Filed Jul. 1, 1982, Ser. No. 394,114

Claims priority, application Japan, Jul. 6, 1981, 56-104406

Int. Cl.³ A61K *31/225;* **C07C** *69/60*

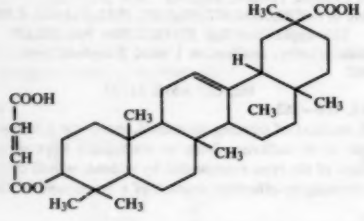
U.S. Cl. 424—313 **14 Claims**

1. A compound of the following formula



and its salts.

3. A pharmaceutical preparation suitable for the treatment of ulcers or as an anti-inflammatory agent or as a cellular immunity activator, comprising as an active ingredient a pharmaceutically effective amount of a compound of the following formula



or its pharmaceutically acceptable salt, and a pharmaceutically compatible inert diluent or carrier.

4,448,789

ENHANCED FLAVOR-RELEASING AGENT

Robert K. Yang, Morris Plains, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Aug. 27, 1982, Ser. No. 412,323

Int. Cl.³ A23G *3/30;* **A23L** *1/222, 1/226*

U.S. Cl. 426—5 **20 Claims**

1. A flavoring composition, which comprises: a flavoring agent and a hydrophilic polymer, said hydrophilic polymer being characterized by

(a) being water-soluble,

(b) being soluble in organic solvent,

(c) having a viscosity below 100 cps, 10% by weight, at 25° C. in water, and

(d) being compatible with the flavoring agent.

4,448,790

PROCESS FOR FRACTIONING GRAIN FLOUR INTO COMPONENTS OF FOOD QUALITY

Marja-Leena Sarkki, Naantali; Martti Söderström, Turku; Hannu Maunula, Turku, and Annika Korhonen, Turku, all of Finland, assignors to Oy Vehnä AB, Raisio, Finland

Filed Jan. 19, 1982, Ser. No. 340,646

Claims priority, application Finland, Jan. 28, 1981, 810246

Int. Cl.³ A23J *1/12;* **A23L** *1/195, 1/09*

U.S. Cl. 426—52 **10 Claims**

1. A process for fractioning grain flour into at least three fractions of food quality including starch, protein and sugar fractions comprising:

(a) slurrying the grain flour into water;

(b) separating the resulting slurry into a heavier fraction containing ordinary grain starch having a particle size of about 15 to 35 mm and a lighter fraction containing about 15 to 40% of the dry substance of the flour containing protein covered small particle starch having a particle size of about 2 to 10 mm and a protein content of about 1.5 to 1.7% of the dry substance of the starch particle,

(c) heating said lighter fraction from step (b) to a temperature of at least 120° C. for a period of time sufficient for the protein network on the surface of the particles of the small particle starch to split and the starch to be gelatinized,

(d) cooling said lighter fraction from step (c) to a temperature of 90° C. or lower and treating said lighter fraction simultaneously with alpha-amylase and beta-glucanase;

(e) separating the resulting protein precipitate from the lighter fraction from step (d) as a precipitate constituting about 20 to 35% of the dry substance of the lighter fraction and containing about 40 to 60% protein based on the dry substance of the precipitate to obtain a clear fraction remaining after separating the precipitate; and

(f) saccharifying the clear fraction from step (e) with amyloglucosidase or fungal amylase at a temperature of 55° C. or lower until the dextrose equivalent is at least 20 to 80.

4,448,791

BROWNABLE DOUGH FOR MICROWAVE COOKING

Roland C. Fulde, Cherry Hill, and Stanley H. Kwis, Pennsauken, both of N.J., assignors to Campbell Soup Company, Camden, N.J.

Filed Nov. 19, 1981, Ser. No. 323,086

Int. Cl.³ A21D *13/00*

U.S. Cl. 426—94 **12 Claims**

1. A composite dough material for incorporation into a food product as a crust, said composite dough material comprising an unreactive substrate dough layer which does not brown upon exposure to microwave energy and said substrate dough layer having coated thereon a thin, uniform layer of a reactive dough composition which undergoes chemical surface browning reactions upon exposure to microwave energy, said reactive dough composition comprising a dough-base having added thereto a reducing sugar and an amino acid source the ratio of reducing sugar to amino acid source being sufficient to promote said chemical surface browning reaction when the composite is exposed to microwave energy for a desired period of time.

4,448,792

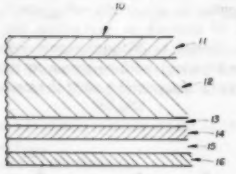
PASTEURIZABLE AND COOK-IN SHRINK BAG CONSTRUCTED OF A MULTILAYER FILM

Henry G. Schirmer, Spartanburg, S.C., assignor to W. R. Grace & Co., Cryovac Division, Duncan, S.C.

Filed Jul. 26, 1982, Ser. No. 401,679

Int. Cl.³ B65B *25/22;* **B65D** *81/34;* **B32B** *7/02*

U.S. Cl. 426—113 **10 Claims**



1. A pasteurizable, cook-in shrink bag constructed of a multilayer film comprising:

(a) a first or sealing and food contact layer comprising propylene homopolymer or copolymer;

(b) a second or heat shrinkable layer comprising a blend of said propylene polymer with about 30–70% by weight of butylene homopolymer or compolymer;

(c) a third or adhesive layer being irradiatively crosslinkable and comprising a copolymer of ethylene;

(d) a fourth or barrier layer comprising vinylidene chloride copolymer;
(e) a fifth or adhesive layer as in said third layer; and
(f) a sixth or optical clarity layer as in said first layer;
(g) further provided that said film is oriented and irradiated to at least a dosage sufficient to render said film delamination resistant during pasteurizing or cooking of a food product contained in said bag.

4,448,793

PROCESS FOR PRODUCING ELONGATED ROD-SHAPED COMMINUTED MEAT PRODUCT

Yngve R. Akesson, Helsingborg, Sweden, assignor to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Filed Apr. 23, 1982, Ser. No. 371,307
Claims priority, application Sweden, Sep. 23, 1981, 8105623
Int. Cl.³ A23L 3/18; A22C 11/00; A23P 1/00
U.S. Cl. 426—241 12 Claims

1. A process for the continuous production of an elongated rod-shaped comminuted meat product which comprises:
(a) feeding a flowable protein-containing food mixture into a hollow mold which is formed by the cooperation of the adjacent runs of a pair of endless flexible belts and which mold has a sealing system formed by at least one longitudinal projection on one of the flexible belts which is engaged with at least one corresponding recess on the other of the flexible belts;
(b) passing the mold containing the food mixture through a microwave oven; and then
(c) releasing the meat product from the said mold.

4,448,794

COATING OF ARTIFICIALLY COLORED CHERRIES

Ulrich Wissgott, La Tour-de-Peilz, and Alexis Berberat, Corseaux, both of Switzerland, assignors to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Filed Jun. 9, 1982, Ser. No. 386,443
Int. Cl.³ A23B 7/16; A23L 1/272
U.S. Cl. 426—267 6 Claims

1. A process for coating artificially coloured real cherries to prevent the migration of the colour therefrom which comprises contacting said cherries with (i) an aqueous solution of an edible calcium salt, then (ii) with a warm aqueous solution consisting essentially of a low-methoxy pectin having a concentration of from 2.5 to 10% by weight based on the weight of water, and then finally (iii) again with an aqueous solution of an edible calcium salt.

4,448,795

PROCESS OF CONCENTRATING ACID WHEY

Frank A. A. Termote, Veghel, Netherlands, assignor to DMV-Campina B.V., Veghel, Netherlands

PCT No. PCT/NL81/00021, 371 Date Apr. 7, 1982, 102(e) Date Apr. 7, 1982, PCT Pub. No. WO82/00570, PCT Pub. Date Mar. 4, 1982
PCT Filed Aug. 12, 1981, Ser. No. 369,017
Claims priority, application Netherlands, Aug. 14, 1980, 8004614
Int. Cl.³ A23C 1/04, 21/00
U.S. Cl. 426—471 9 Claims

1. A method for the processing of acid whey which comprises continuously evaporating acid whey, under conditions substantially avoiding denaturation of whey proteins, in a series of at least two separate evaporation phases to obtain a concentrated liquid whey; subjecting the partially concentrated liquid whey obtained in each preceding evaporation phase to evaporation in a subsequent evaporation phase; storing the partially concentrated liquid whey, obtained from at least one of said preceding evaporation phases and having a dry solids content of at least 30% by weight, in a storage zone for at least 30 minutes at a temperature above 35° C.; further subjecting the partially concentrated liquid whey, after storage, to evaporation in a subsequent evaporation phase; recovering from the last evaporation phase a concentrated liquid whey product having a dry solids content above 45% by weight; and spray-drying said whey product.

4,448,796

COATING OF PLANT SEEDS

Franz Wieser, Linz, and Hans-Peter Hofinger, Wels, both of Austria, assignors to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Filed Nov. 2, 1982, Ser. No. 438,607
Claims priority, application European Pat. Off., Nov. 30, 1981, 81110000
Int. Cl.³ A01C 1/06
U.S. Cl. 427—4 10 Claims

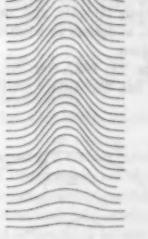
1. A process for treating plant seeds with an active ingredient, which includes forming on the surface of the seeds a firmly adhering, moisture-permeable, essentially water-insoluble coating, by applying to the seeds a coating solution comprising 4.0 to 20% by weight of a binder and 45 to 95% by weight of a solvent for the binder, wherein: (i) the binder is a natural or synthetic resin or a natural or synthetic wax, and (ii) the respective weight ratios of solvent to binder and solvent to total solids in the solution are 3.5 to 20:1 and 0.4 to 6.0:1, and thereafter eliminating the solvent, characterised in that the coating solution also contains 5.0 to 25.0% by weight of a metal pigment.

4,448,797

MASKING TECHNIQUES IN CHEMICAL VAPOR DEPOSITION

Robert D. Burnham, Los Altos Hills, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Feb. 4, 1981, Ser. No. 231,556
Int. Cl.³ H01L 21/203, 21/205
U.S. Cl. 427—8 39 Claims



1. A method of producing at least one nonplanar shaped layer on the surface of a semiconductor structure positioned in the heated deposition zone of a reactor of a chemical vapor deposition system comprising the step of providing masking means during the pyrolyzation of vapor mixtures of elemental compounds deposited as said layer in said heated deposition zone, said masking means having at least one aperture therein for exposing said structure surface to said vapor mixtures, said layer characterized by predetermined lateral spatial variation

in thickness with tapered contour and with the thickness region of said variation central relative to said aperture, said variation controlled and, therefore, predetermined in part by the dimensional size and thickness of said aperture.

4,448,798

COATING METHOD

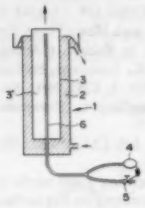
Masahide Kageyama, Tokyo, and Takeshi Fujita, Kuki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 18, 1983, Ser. No. 486,076

Claims priority, application Japan, Apr. 23, 1982, 57-68507

Int. Cl.³ G03G 5/082

U.S. Cl. 427—8 **3 Claims**



1. A method of coating the outside surface of a cylindrical member, with one end being closed and the other end being open, which comprises:

(1) dipping said member in a coating material, while holding the same substantially vertically and with the closed end being turned upward;

(2) detecting an increase in the internal pressure caused by the evaporation of solvent of said coating material in an internal hollow part of said member; and

(3) releasing a part of the gas from said internal hollow part to prevent generating bubbles therefrom into the coating material.

3. A method of coating outside surface of a cylindrical member according to claim 1, wherein said cylindrical member is an image bearing member for use in an electrophotographic device.

4,448,799

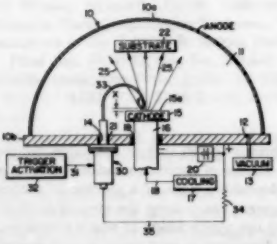
ARC-INITIATING TRIGGER APPARATUS AND METHOD FOR ELECTRIC ARC VAPOR DEPOSITION COATING SYSTEMS

Clark Bergman, Roseville; Gary E. Vergason, Minneapolis; Robert Clark, Vadnais Heights, and Shannon Bosak, Minneapolis, all of Minn., assignors to Multi-Arc Vacuum Systems Inc., Saint Paul, Minn.

Filed Apr. 21, 1983, Ser. No. 487,145

Int. Cl.³ B05D 3/06

U.S. Cl. 427—37 **34 Claims**



1. An arc-initiating apparatus of the type suitable for mounting to a port of a vapor deposition chamber, for moving an arc-initiating rod into and out of engagement with a cathode source surface during an electric arc vapor deposition process, comprising:

(a) a housing defining an internal cavity having oppositely disposed ends;

(b) means for mounting said housing to a port of a vapor deposition chamber;

(c) a plunger shaft axially extending between first and second ends and slidably mounted for axial movement within said housing internal cavity;

(d) seal means arranged and configured for maintaining a vacuum seal at said port, between said chamber and said housing;

(e) contact rod means operatively connected to said second end of said plunger for moving in response thereto, and having an engagement portion configured and arranged for selectively engaging a surface of a cathode source mounted in the vapor deposition chamber, said contact rod means being operable in response to axial movement of said plunger shaft to selectively engage and disengage the cathode source surface; and

(f) pneumatic cylinder means having a prime mover operatively connected with said first end of said plunger shaft for positively axially moving said plunger shaft between extended and retracted positions, whereby when said plunger shaft is positioned in said retracted position, said contact rod means operatively engages said cathode source surface, and when said plunger shaft is positioned in said extended position, said contact rod means is moved out of engagement with said cathode source surface.

4,448,800

METHOD FOR THE MANUFACTURE OF SEMICONDUCTOR DEVICE USING REFRACTORY METAL IN A LIFT-OFF STEP

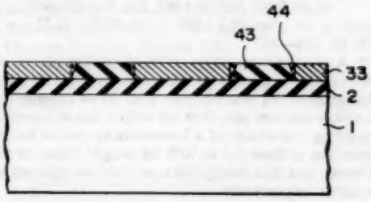
Kohei Ehara, Kodaira; Susumu Muramoto, Hachioji; Takashi Morimoto, Tokorozawa; Seitaro Matsuo, Hachioji, and Manabu Itsumi, Hoya, all of Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Japan

Filed Jul. 30, 1982, Ser. No. 403,531

Claims priority, application Japan, Aug. 10, 1981, 56-124168; Aug. 14, 1981, 56-126643

Int. Cl.³ H01L 21/302

U.S. Cl. 427—39 **7 Claims**



1. A method for the manufacture of a semiconductor device, comprising the steps of:

(a) forming on a semiconductor substrate a first insulating material layer, a polysilicon film, and a refractory metal layer in that order;

(b) selectively removing at least a portion of the refractory metal layer to form a predetermined pattern having a side wall and selectively removing at least a portion of the polysilicon film by using the pattern as a mask to expose an area of the first insulating material layer;

(c) forming a second insulating material layer by an ECR plasma deposition method, which is slightly thicker than the polysilicon film, on the refractory metal pattern and the exposed area of the first insulating material layer which is not covered with the refractory metal pattern;

(d) heat treating the semiconductor substrate including the

second insulating material layer and etching away the second insulating material layer to a thickness substantially equal to that of the polysilicon film to thereby expose the side wall of the refractory metal pattern; and

(e) dissolving the refractory metal pattern to lift it off along with the second insulating material layer overlying the refractory material pattern, thereby to obtain a structure in which the polysilicon is embedded substantially level with the second insulating material layer formed on the area of the first insulating material layer which is not covered with the refractory metal pattern.

4,448,801

PROCESS FOR FORMING DEPOSITION FILM

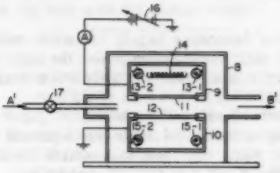
Tadaji Fukuda, Kawasaki, and Yuji Nishigaki, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 275,586, Jun. 18, 1981. This application Apr. 29, 1983, Ser. No. 487,718

Claims priority, application Japan, Jun. 23, 1980, 55-85019

Int. Cl.³ H01L *45/00*

U.S. Cl. 427—39 **3 Claims**



1. A process for forming a film of an amorphous material comprising at least one member selected from the group consisting of hydrogen atom and halogen atom and at least one member selected from the group consisting of silicon atom and germanium atom as a matrix, which comprises introducing a film formable material in a gaseous form containing at least a source of silicon or germanium as a matrix-formable atom into a vacuum deposition chamber, and decomposing the gaseous material by discharge of direct current or low frequency alternating current while supplying to the film during formation at least one member selected from hydrogen and halogen characterized in that the film, during formation, is irradiated with an electromagnetic wave having a wavelength from 350 nm. to 850 nm to activate the amorphous material and increase electroconductivity of the film.

4,448,802

METHOD AND APPARATUS FOR EVAPORATING MATERIAL UNDER VACUUM USING BOTH AN ARC DISCHARGE AND ELECTRON BEAM

Rainer Buhl, Sargans, Switzerland; Eberhard Moll, Triesen, Liechtenstein, and Helmut Daxinger, Wangs, Switzerland, assignors to Balzers Aktiengesellschaft, Liechtenstein

Filed Mar. 12, 1982, Ser. No. 357,719

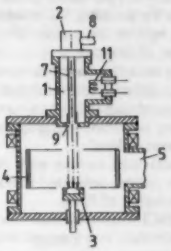
Claims priority, application Switzerland, Mar. 13, 1981, 1719/81

Int. Cl.³ C23C *13/00, 13/12*

U.S. Cl. 427—42 **5 Claims**

1. A method of evaporating an evaporative substance under vacuum comprising: generating a low voltage arc in a cathode chamber for receiving an ionizable gas and containing a heatable cathode, the chamber having a small opening communicating with an evacuable evaporation chamber, the low voltage arc being generated along an axis passing through the small opening; generating a high voltage electron beam, by means of an electron gun producing electron energy in excess of 1 keV, which is directed along the axis through the small opening; the low voltage arc and the high voltage electron beam passing coaxially through the small opening into the evaporation chamber in a manner such that a low voltage arc is established in a path surrounding the high voltage electron beam; positioning a crucible forming an anode for the low voltage arc in the evaporation chamber and on the axis for receiving the low voltage arc and the high voltage electron beam to evaporate a substance in the crucible; and placing a substrate in the evaporation chamber for receiving the evaporated substance from the crucible.

2. A device for evaporating an evaporative substance under vacuum, comprising: an evacuable evaporation chamber; a receptacle provided in said evaporation chamber for a substance to be evaporated; low voltage arc means for establishing a low voltage arc between a cathode and an anode located in



said evaporation chamber; and an electron gun for bombarding the substance with a high voltage electron beam having an electroenergy more than 1 KeV; said low voltage arc means comprising an anode, a hot cathode and a cathode chamber surrounding said hot cathode for containing an ionizable gas separately of said evaporation chamber and communicating with said evacuation chamber through a small opening; said anode and cathode and said electron gun being arranged to discharge along a common axis with said high voltage electron beam passing coaxially through said small opening to said cathode chamber; said low voltage arc being established in a path surrounding said high voltage electron beam of said electron gun.

4,448,803

PROCESS FOR MANUFACTURNG A POLYCHELATE COATING

Jurgen F. Gauger; Jean M. Hinden, and Michael Katz, all of Geneva, Switzerland, assignors to Diamond Shamrock Corporation, Dallas, Tex.

PCT No. PCT/US81/00217, 371 Date Oct. 19, 1981, 102(e) Date Oct. 19, 1981, PCT Pub. No. WO81/02432, PCT Pub. Date Sep. 3, 1981

PCT Filed Feb. 23, 1981, Ser. No. 315,852

Claims priority, application United Kingdom, Feb. 25, 1980, 8006230; Feb. 25, 1980, 8006231

Int. Cl.³ H01L *29/28*

U.S. Cl. 427—58 **21 Claims**

1. A process for forming a stable, bonded, electrically conducting, polychelate coating on an electrically conductive substrate surface providing metal coordination centers therein which comprises: contacting said surface with a vaporized tetranitrile compound in amounts of not more than about 10 grams per square meter of said surface at temperatures between about 400° and 600° C. for a time period of between about 12 and about 24 hours and under conditions carefully controlled to avoid substantial thermal decomposition of said tetranitrile compound or other undesirable competing reactions, thereby achieving a cross-linked, relatively insoluble polychelate coating bonded to the substrate via said metal coordination centers.

4,448,804

METHOD FOR SELECTIVE ELECTROLESS PLATING OF COPPER ONTO A NON-CONDUCTIVE SUBSTRATE SURFACE

William J. Amelio, Binghamton; Gary K. Lemon; Voya Markovich, both of Endwell; Theodore Panasik, Vestal; Carlos J. Sambucetti, Croton-on-Hudson, and Donna J. Trevitt, Vestal, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 11, 1983, Ser. No. 540,600

Int. Cl.³ B05D *5/12, 1/32, 3/04;* **C23F** *1/00*

U.S. Cl. 427—98 **20 Claims**

1. Method for selectively depositing copper onto the surface of a non-conductive substrate comprising the steps of:

(a) providing a copper sheet having a roughened surface;

(b) laminating said copper sheet to the non-conductive substrate surface by pressing the roughened surface of said copper sheet against the surface of said substrate;

(c) etching away all copper;

(d) conditioning the etched surface by contacting the surface with an acidic solution containing a multifunctional cationic group containing at least two available ionic moities;

(e) activating the conditioned surface with particles of palladium/stannous chloride;

(f) rinsing the activated surface with deionized water;

(g) bringing the rinsed, activated surface into contact with an aqueous solution of HCl;

(h) rinsing the HCl treated surface with deionized water;

(i) drying the substrate at a temperature between 60° C. and 100° C.;

(j) applying a photoresist layer to the cleaned, activated surface and exposing and developing the photoresist; and

(k) plating the activated surface by bringing it into contact for a period from about 15 minutes to about 30 minutes with a first plating bath containing copper sulphate, a complexing agent, formaldehyde, a surfactant and an oxygen content of less than 2 ppm and then for a period from about 10 hours to about 20 hours with a second plating bath differing from the first plating bath by an increased oxygen content of about 3 ppm to about 4 ppm and a NaCN content of 10 ppm to 20 ppm.

4,448,805

METHODS OF PRODUCING DEVICES COMPRISING METALLIZED REGIONS ON DIELECTRIC SUBSTRATES

Meirion F. Lewis, Malvern, England, assignor to National Research Development Corporation, London, England

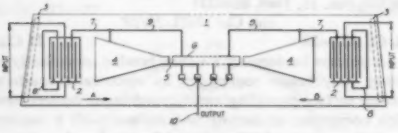
PCT No. PCT/GB81/00222, 371 Date Jul. 8, 1982, 102(e) Date Jul. 8, 1982, PCT Pub. No. WO82/01790, PCT Pub. Date May 27, 1982

PCT Filed Oct. 12, 1981, Ser. No. 396,900

Claims priority, application United Kingdom, Nov. 17, 1980, 8036806

Int. Cl.³ B05D *5/12*

U.S. Cl. 427—100 **14 Claims**



1. A method of producing a device comprising a dielectric substrate and metallised regions superimposed upon the substrate constituting elements of the device, said method comprising the steps of forming at least one resistive link connected between at least two otherwise mutually insulated metallised regions, said link being inessential to the required function of the device when subsequently connected into an external circuit but acting to prevent establishment of a damaging electric field between adjacent ones of said metallised regions due to unwanted electric charge storage not arising from the in-circuit operation of the device.

4,448,806

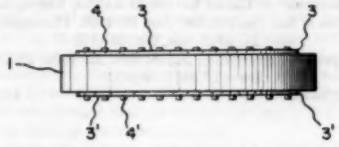
SOLDERABLE LARGELY BASE METAL ELECTRODES FOR METAL OXIDE VARISTORS

Lionel M. Levinson, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 239,246, Mar. 2, 1981. This application May 2, 1983, Ser. No. 490,611

Int. Cl.³ B05D *5/12;* **H01C** *7/12*

U.S. Cl. 427—102 **5 Claims**



1. A method of fabricating largely non-noble metal electrodes for metal oxide varistors comprising the steps of:

screen printing a base metal electrode on a metal oxide varistor substrate;

drying the printed base metal electrode;

screen printing a distributed noble metal pattern on said printed base metal electrode, said pattern covering selected regions of said base metal electrode; and

heating said metal oxide varistor substrate.

4,448,807

PREPARATION OF AN ELECTROGRAPHIC RECORDING MATERIAL

Irving Serlin, Springfield, Mass., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 218,868, Dec. 22, 1980, Pat. No. 4,397,883. This application May 16, 1983, Ser. No. 495,016

Int. Cl.³ B41M *5/00;* **G01D** *15/34*

U.S. Cl. 427—121 **10 Claims**

1. A method of producing an electrographic recording material which comprises applying to a conductive paper support an aqueous latex consisting essentially of a C_4–C_6 vinyl ester interpolymer and a protective colloid and evaporating water from the latex to form a continuous insulating layer in adherent contact with the conductive sheet support, wherein the aqueous latex has a pH in the range of about 6.2 to about 7.5, wherein the vinyl ester interpolymer comprises from about 3 to about 7 weight percent of carboxylic acid groups supplied by an interpolymerized C_4–C_{10} vinylene monobasic carboxylic acid monomer of the formula RCH=CHCOOH where R is a hydrocarbyl, hydrocarbyloxy, or hydrocarbyloxycarbonyl group and wherein the concentration of protective colloid is in the range of about 0.2 to about 0.8 parts by weight per 100 parts by weight of the interpolymer.

4,448,808

METHOD FOR PREPARING PATTERN PIECE

David R. Pearl, West Hartford, Conn., assignor to Gerber Garment Technology, Inc., South Windsor, Conn.

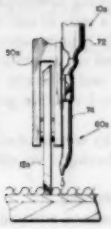
Filed Apr. 15, 1982, Ser. No. 368,708

Int. Cl.³ B05D *3/12*

U.S. Cl. 427—208.6 **14 Claims**

1. A method for preparing a pattern piece from sheet material comprising the steps of spreading at least one sheet of material on a supporting surface, moving a cutting instrument in cutting engagement with the spread material in response to a predetermined cutting program to cut the pattern piece from

the sheet material, simultaneously applying adhesive to the cutting instrument as the instrument is moved in cutting engagement with the sheet material and transferring the substance from the moving cutting instrument to one of the parts



of the sheet material which includes the pattern piece and the scrap material adjacent the pattern piece, moving a pickup surface into engagement with the applied adhesive, and picking up the one part with the pickup surface.

4,448,809

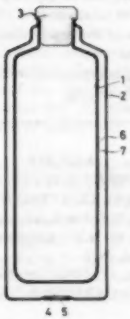
METHOD OF SILVER PLATING STAINLESS STEEL VACUUM BOTTLE SURFACES

Kiyoshi Nagai, Nishinomiya; Hiroshi Shinohara, Nara, and Nobuo Imamura, Matsubara, all of Japan, assignors to Taiyo Sanso Co., Ltd., Osaka, Japan

Filed Sep. 30, 1982, Ser. No. 429,890

Int. Cl.³ B05D *7/22, 7/14;* C23C *3/02*

U.S. Cl. 427—239 **6 Claims**



1. A method of silver plating stainless steel vacuum bottle surfaces including the steps of:

thermally treating the surfaces to be coated at a temperature of at least 700° C. in a vacuum furnace at a vacuum of at least 1×10^{-2} torr; and,

then using an electroless plating technique to plate silver onto said surface.

4,448,810

TREATING TEXTILE FIBRES WITH QUATERNARY SALT POLYDIORGANOSILOXANE

Stephen Westall, Barry, Wales, assignor to Dow Corning Limited, Barry, Wales

Filed Oct. 15, 1982, Ser. No. 434,679

Int. Cl.³ B05D *3/04, 3/02*

U.S. Cl. 427—302 **5 Claims**

1. A process for the treatment of fibres which comprises applying thereto a polydiorganosiloxane having in the molecule at least one silicon-bonded —OM group, wherein M represents a hydrogen atom, an alkyl group or an alkoxyalkyl group, and at least one silicon-bonded quaternary salt group represented by the general formula

$$-RN^{+}R'X^{-}$$

with R'' above and below the N

wherein R represents a divalent group having from 3 to 10 carbon atoms, the said group being composed of carbon, hydrogen and, optionally, oxygen in the form of ether linkages and/or hydroxyl groups, R' represents a monovalent hydrocarbon group having from 1 to 15 carbon atoms or the group $(—OQ)_aOZ$, wherein Q represents an alkylene group having 2 or 3 carbon atoms, *a* has a value from 1 to 20 and Z represents a hydrogen atom, an alkyl group or an acyl group, each R'' represents methyl or an ethyl group and X represents a halogen atom, at least 40 percent of the total silicon-bonded substituents in the polydiorganosiloxane being methyl groups and any remaining substituents being monovalent hydrocarbon groups having from 2 to 8 carbon atoms.

4,448,811

OXIDIZING AGENT FOR ACIDIC ACCELERATOR IN ELECTROLESS METAL PLATING PROCESS

Warren R. Doty, Los Alamos, N. Mex., and Timothy J. Kinney, Berkley, Mich., assignors to OMI International Corporation, Warren, Mich.

Continuation-in-part of Ser. No. 335,780, Dec. 30, 1981, abandoned. This application Jun. 16, 1983, Ser. No. 505,133

Int. Cl.³ C23C *3/02*

U.S. Cl. 427—304 **12 Claims**

1. In a process for treating a polymeric plastic substrate to render it receptive to electroless plating including the steps of etching the substrate with an aqueous acid solution containing hexavalent chromium ions, activating the etched substrate, and accelerating the activated substrate, the improvement comprising contacting the activated substrate during the acceleration step with an aqueous accelerating solution containing an aqueous soluble compatible oxidizing agent present in an amount effective to increase the activity of the accelerating solution, which oxidizing agent is selected from the group consisting of chromic acid, potassium iodate, potassium meta-periodate, ammonium persulfate, vanadium pentoxide, and iodine, as well as mixtures thereof.

4,448,812

SPRAY COATING PROCESS, AND AN ARRANGEMENT FOR CARRYING OUT THE SAME

Arno Lauke, Münster, Fed. Rep. of Germany, assignor to BASF Farben & Fasern A.G., Hamburg, Fed. Rep. of Germany

PCT No. PCT/DE82/00027, 371 Date Sep. 27, 1982, 102(e) Date Sep. 27, 1982, PCT Pub. No. WO82/02843, PCT Pub. Date Sep. 2, 1982

PCT Filed Feb. 11, 1982, Ser. No. 432,947

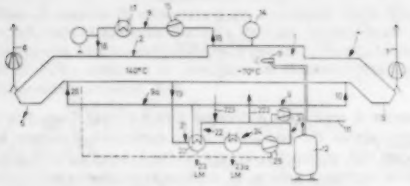
Claims priority, application Fed. Rep. of Germany, Feb. 23, 1981, 3106605

Int. Cl.³ B05D *1/02*

U.S. Cl. 427—377 **6 Claims**

1. A spray coating process having a spraying zone (1), a drying zone (2) located after said spraying zone, a preheating zone located ahead of said spraying zone and a closed spraying cabin with spray tools mounted therein wherein an inert gas atmosphere is introduced into said preheating zone and a sol-

vent enriched inert gas atmosphere is generated in said spraying and drying zones, solvents are removed from said solvent



enriched inert gas atmosphere and said inert gas atmosphere free of solvents is recirculated to said drying zone.

4,448,813

PREPARATION OF CORD FOR BONDING TO RUBBER

Thomas S. Solomon, Brecksville, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

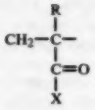
Filed Sep. 20, 1982, Ser. No. 420,548

Int. Cl.³ B05D *3/02, 1/18;* **C09J** *3/12*

U.S. Cl. 427—381 **13 Claims**

7. A one-step process for dipping cord or fabric to coat it with an adhesive from a bath prior to drying and heat-setting the adhesive, comprising,

(a) a one-step process for dipping the cord or fabric made from adhesive-activated polyester or aramid in said bath comprising an aqueous dispersion containing an adhesive latex of a diene polymer, an acrylic resin selected from the group consisting of poly[(meth)acrylic acids], poly[N-methylol (meth)acrylamides], and a copolymer of one or more monomers of the foregoing homopolymers with a lower (meth)acrylic acid ester, having the structure



wherein, R represents H, methyl, ethyl, Cl or CN, and, X represents hydroxyl (OH), hydroxymethylamino ($NHCH_2OH$), or alkoxy (O-alkyl) having from 1 to 4 carbon atoms, and, a reversibly blocked polyisocyanate formed by reversibly blocking a polyisocyanate with a blocking agent capable of an addition reaction with said polyisocyanate, wherein resorcinol formaldehyde solids in said adhesive latex and said acrylic resin are present in a ratio in the range from about 0.5:1 to about 5:1, and the ratio of resorcinol formaldehyde solids to reversibly blocked polyisocyanate is in the range from about 9:1 to about 1:3,

(b) drying the cord at a temperature in the range from about 200° F. to about 350° F. under tension, and thereafter

(c) heat-setting the coated cord or fabric at a temperature in the range from about 350° F. but below that which is deleterious to the tensile strength of the cord or fabric.

4,448,814

METHOD OF FORMING FILM

Chiyuki Shimizu, and Nobuo Nakamura, both of Ota, Japan, assignors to General Electric Company, Waterford, N.Y.

Filed Dec. 23, 1981, Ser. No. 334,013

Claims priority, application Japan, Dec. 17, 1980, 55-178449

Int. Cl.³ B05D *3/02;* **C08G** *77/04*

U.S. Cl. 427—387 **14 Claims**

1. A method for forming a stainproof film which comprises the steps of dissolving:

(1) 100 parts by weight of an aminoxy group-containing organosilicon compound having an average of more than two organoaminoxy groups per molecule,

(2) 10 to 1,000 parts by weight of a mixture or condensation products of:

(A) 100 parts by weight of benzene-soluble polyorganosiloxane consisting substantially of SiO_2 units and $(R^1)_3SiO_{\frac{1}{2}}$ units in a ratio of one mole of SiO_2 to 0.4 to 1.0 mole of $(R^1)_3SiO_{\frac{1}{2}}$ units wherein R^1 is the same or different substituted or unsubstituted monovalent hydrocarbon group and wherein the ratio of reactive groups is 0.0004 to 1 reactive group per silicon atom, and

(B) 10 to 1,000 parts by weight of silanol-terminated polydiorganosiloxane having a viscosity of 30 to 2,000,000 cSt at 25° C., in

(3) a mixed solvent consisting of:

(A) a volatile organosilicon compound represented by the molecular formula:

$(R^2)_4Si$,

$(R^3)_3SiO[(R^4)_2SiO]_mSi(R^3)_3$,

$R^5Si[OSi(R^6)_3]_3$, or

$[(R^7)_2SiO]_n$

wherein R^2 to R^7 are hydrogen or the same or different alkyl groups; m is 0 or a positive number; and n is 3 or a positive number greater than 3; and having a boiling point of 70° to 250° C. under normal pressure; and

(B) a hydrocarbon solvent, wherein the quantity of component (a) is more than 5 weight percent of the total quantity of components (1), (a), and (b), such that the total quantity of components (1) and (2) are 5 to 80 weight percent of the total quantity of components (1), (2), and (3); and

applying the resulting composition to the surface of a silicone elastomer, followed by drying.

4,448,815

MULTI-COMPONENT SOLVENTLESS SILICONE RELEASE COATING SYSTEM

Maurice E. Grenoble, Ballston Lake, and Richard P. Eckberg, Round Lake, both of N.Y., assignors to General Electric Company, Waterford, N.Y.

Filed Jan. 17, 1983, Ser. No. 458,421

Int. Cl.³ B05D *3/02*

U.S. Cl. 427—387 **42 Claims**

1. A process for providing a substrate having a silicone release coating composition cured thereon comprising the steps of:

(a) mixing 100 parts by weight of Component A with 5 to 100 parts of Component B and 3 to 10 parts of Component C, wherein Component A is an olefinorganopolysiloxane or a silanol end-stopped organopolysiloxane base polymer, Component B is a precious metal or precious metal complex catalyst dispersed in a vinyl silicone fluid; and Component C is an organohydrogenpolysiloxane cross-linking agent, wherein Component A and/or Component C further includes an amount of inhibitor effective for retarding a hydrosilation cure reaction at ambient temperature but which does not interfere with such reaction at elevated temperatures and wherein prior to use Component A, Component B and Component C are stored in separate containers;

(b) applying a coating of the mixture comprising Component A, Component B and Component C to a suitable substrate; and

(c) curing said coating to said substrate.

4,448,816

COMPOUNDS, COMPOSITIONS AND PROCESS

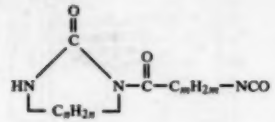
Edward A. Barsa, Cheshire, and Philip W. Sherwood, Milford, both of Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Aug. 4, 1983, Ser. No. 520,352

Int. Cl.³ C08G *18/80;* **A23L** *2/02;* **B32B** *27/40;* **C07D** *233/30*

U.S. Cl. 427—388.2 **18 Claims**

1. A compound having the formula



wherein C_nH_{2n} represents alkylene from 2 to 12 carbon atoms, inclusive, and C_mH_{2m} represents alkylene from 2 to 20 carbon atoms, inclusive, and C_nH_{2n} and C_mH_{2m} are each independently substituted by from 0 to 2n inert substituents and 0 to 2m substituents, respectively.

8. A process for the preparation of a polyurethane which comprises reacting a compound according to claim 1 with a polyol in the presence of a urethane catalyst and heating the reaction mixture at a temperature sufficient to effect ring opening of the hexahydropyrimidin-2-one moiety.

4,448,817

TEXTILE FINISHING OF KERATINOUS ARTICLES

Ladislav Benisek, Burley-in-Wharfedale, and Penelope C. Craven, Shipley, both of England, assignors to Wool Development International Limited, London, England

Continuation-in-part of Ser. No. 222,943, Jan. 6, 1981, abandoned. This application Sep. 30, 1982, Ser. No. 428,950

Int. Cl.³ B05D *3/02*

U.S. Cl. 427—412 **10 Claims**

1. A method for finishing keratinous textile articles which comprises applying a mixture of about 0.2 to 2.0% of an anti-felt polymer and about 1.0 to 4.0% of a chlorinated ethylenically unsaturated monomer on said article; drying and curing said article following the application of said mixture on said article; and thereafter applying from about 0.5 to 2.5% of an anionic titanium complex or about 1.0 to 5.0% anionic zirconium complex (calculated as oxide) to said article at a pH of about 4 or less.

4,448,818

METHOD AND APPARATUS FOR APPLYING LIQUID TO A MOVING SURFACE

Stefan Hartog, Bromma, and Holger Hollmark, Huddinge, both of Sweden, assignors to Svenska Traforskningsinstitutet, Stockholm, Sweden

Continuation-in-part of Ser. No. 154,419, Aug. 30, 1979, abandoned. This application Sep. 28, 1981, Ser. No. 306,374

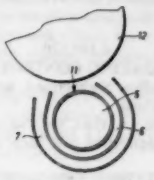
Claims priority, application Sweden, Dec. 30, 1977, 7714975

Int. Cl.³ B05D *1/02*

U.S. Cl. 427—424 **8 Claims**

1. A method of applying liquid in a finely divided form onto a moving surface comprising:

positioning an elongated container substantially parallel to and extending transversely across the width of a surface which is mounted for movement, said container having an inlet and an outlet in the form of a slit or series of openings facing the surface, with the cross-sectional area of the inlet being substantially larger than the total area of the slit or openings;



passing a stream of air containing suspended liquid particles into said inlet so that said stream is substantially parallel to the surface;

increasing the velocity of the air-liquid stream as it emerges from said slit or openings due to the smaller cross-sectional area thereof, at least a part of the liquid particles being deflected and passing substantially normal to said surface to be deposited thereon.

4,448,819

SPRAY COATING SYSTEM

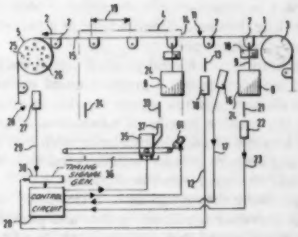
Karl Buschor, St.Gallen, Switzerland, assignor to Ransburg-Gema AG, Switzerland

Filed Dec. 6, 1982, Ser. No. 447,167

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1981, 3148540

Int. Cl.³ B05D *1/02;* **B05B** *12/02*

U.S. Cl. 427—424 **19 Claims**



1. A method for spray coating articles as they are moved through a spray-coating region by a conveyor or having a plurality of support members located at spaced locations along said conveyor, said method comprising the steps of:

(a) hanging members to be spray coated from selected ones of said support members such that only said selected support members have an article to be sprayed associated with it;

(b) generating conveyor movement pulses having a frequency representative of the speed of said conveyor, and therefore the speed of said articles, as it moves through said spray coating region;

(c) generating a start signal whenever a support member having an article associated with it reaches an initial position upstream of said spray-coating region, said step of generating start signals comprising the steps of:

(1) generating a first signal whenever a said support member reaches said initial position;

(2) generating a second signal whenever an article to be coated is associated with a said support member located at said initial position; and

(3) generating a said start signal when both said first and second signals are generated; and

(d) spray coating each said article as it moves through said spray-coating region in a manner determined by said start signal and said conveyor movement pulses.

4,448,820

SPRAY COATING CONTROL SYSTEM

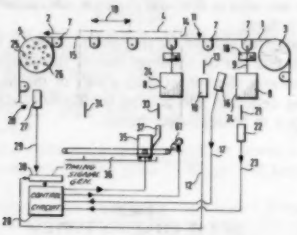
Karl Buschor, St.Gallen, Switzerland, assignor to Ransburg-Gema AG, Switzerland

Filed Dec. 6, 1982, Ser. No. 447,299

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1981, 3148539

Int. Cl.³ B05D *1/02*; B05B *12/02*

U.S. Cl. 427—424 **17 Claims**



10. A method for controlling the operation of a sprayer in synchronism with the movement of an article to be sprayed through a spray-coating region by a conveyor, said conveyor having a plurality of detectable elements located at spaced locations along said conveyor, said method comprising the steps of:

(a) generating conveyor movement pulses having a frequency representative of the speed of said conveyor, and therefore the speed of said article, as it moves through said spray-coating region;

(b) generating an element position signal each time one of said elements passes a predetermined location, whereby said element position signals provide information regarding the relative lengths of subsections of said conveyor, the location of said element being such that the frequency of said element position signals is less than the frequency of said conveyor movement pulses;

(c) generating timing signals at a frequency determined by said conveyor movement pulses and periodically adjusting the phase of said timing signals as a function of said element position signals; and

(d) controlling the operation of said sprayer as said article is moved through said spray-coating region as a function of said timing signals.

4,448,821

SPRAY COATING SYSTEM

Karl Buschor, St. Gall, Switzerland, assignor to Ransburg-Gema AG, Switzerland

Filed Dec. 6, 1982, Ser. No. 447,309

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1981, 3148541

Int. Cl.³ B05D *1/02*; B05B *12/02*

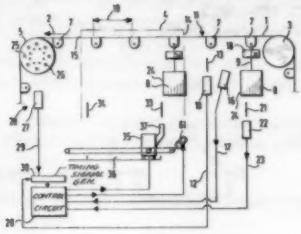
U.S. Cl. 427—424 **20 Claims**

16. A method for spray coating articles as they move through a spray-coating region, comprising the steps of:

(a) sequentially transporting a plurality of articles through said spray-coating region along a first path;

(b) generating a first position signal indicative of the actual position of a sprayer along a second path, parallel to said first path, said sprayer spray coating each said article as said article is transported through said spray-coating region;

(c) generating a second position signal indicative of the desired instantaneous position of said sprayer along said second path; and



(d) controlling the movement of said sprayer along said second path as a function of the difference between said actual and desired positions of said sprayer as indicated by said second and first position signals, respectively.

4,448,822

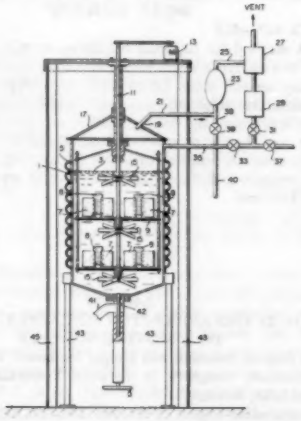
APPARATUS AND METHOD FOR THE PRODUCTION OF GAS FILTERS

Kung-You Lee, Wappingers Falls, N.Y.; Jackson K. Chiou, Bakersfield, Calif., and Matthew A. McMahon, Wappingers Falls, N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Jun. 28, 1982, Ser. No. 392,856

Int. Cl.³ B05D *1/02*

U.S. Cl. 427—430.1 **9 Claims**



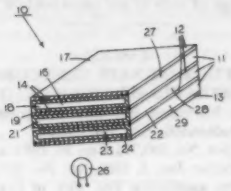
1. A method for coating a substrate with an alumina hydrate film comprising the steps of contacting a caustic solution in a vessel with a plurality of substrates to be coated and with a plurality of porous containers having aluminum metal therein, reacting said aluminum metal with said caustic solution to form an aluminate coating solution, mechanically agitating said caustic solution with a flat blade turbine having a diameter of about 35 to about 65 percent of the diameter of said vessel, and depositing alumina hydrate on said substrate.

4,448,823

MULTI-COLORED LIQUID CRYSTAL DISPLAY DEVICE

Brad W. Clifford, 747 E. Main St., Hoopeston, Ill. 60942

Filed Sep. 29, 1982, Ser. No. 427,233
Int. Cl.[3] B32B *31/20*
U.S. Cl. 428—1 7 Claims



1. A multi-colored liquid crystal display device comprising at least three color units, said color units comprising:

(a) first liquid crystal display and filter means comprising a first liquid crystal display unit operably connected to a first colored filter for providing a first color unit;

(b) second liquid crystal display and filter means comprising a second liquid crystal display unit operably connected to a second colored filter for providing a second color unit; and

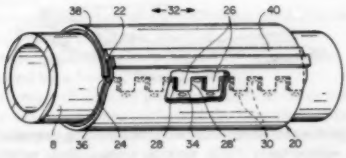
(c) third liquid crystal display and filter means comprising a third liquid crystal display unit operably connected to a third color filter for providing a third color unit and being disposed between said first and second liquid crystal display and filter means; said color units being operably disposed proximal to one another and aligned with one another such that at least some of any light that passes through one of said color units will also pass through all remaining said color units; whereby different colored displays may be selectively displayed by selectively energizing one or more of said first, second and third liquid crystal display units.

4,448,824

WRAPAROUND PROTECTIVE CLOSURE

James C. Holmes, San Francisco; Harvey Bush, Palo Alto, and Roger L. Fink, Redwood City, all of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Jan. 28, 1982, Ser. No. 344,275
Int. Cl.[3] B32B *31/26*
U.S. Cl. 428—33 19 Claims



1. In combination with an elongate substrate, a wraparound closure, comprising:

A. a dimensionally-recoverable sheet having opposing transverse-edges;

B. means for preventing a leak path, comprising;

1. one of the transverse-edges having at least two structural units,

2. each unit having at least one spoiler-edge, said spoiler-edge substantially perpendicular to the transverse-edge,

3. each spoiler-edge having a length equal to at least twice the thickness of the sheet,

4. the spoiler-edges adjacent to each structural unit being separated by a distance at least twice the length of the spoiler-edge, and

the sheet overlappingly wrapped around the substrate such that the means for preventing a leak path is enveloped between the other transverse edge and the substrate,

whereby a continuous leak path in the transverse direction is preventedne of the transverse edges having at least two structural units,

2. each unit having at least one spoiler-edge substantially perpendicular to the transverse-edge, and

3. each spoiler-edge having a length equal to at last twice the thickness of the sheet; and

the sheet overlappingly wrapped around the substrate such that the means for preventing a leak path is enveloped between the other transverse edge and the substrate,

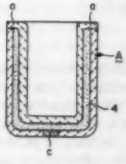
whereby a continuous leak path in the transverse direction is prevented.

4,448,825

THERMALLY INSULATED CERAMIC CONTAINER AND METHOD FOR MANUFACTURE THEREOF

Toshio Asahara, 1017-31, Ouaza Uchiage, Neyagawa, Osaka, Japan

Filed Mar. 2, 1982, Ser. No. 353,970
Claims priority, application Japan, Mar. 6, 1981, 56-32755
Int. Cl.[3] A47J *41/00;* H05B *3/68;* C04B *33/34;* B32B *5/18*
U.S. Cl. 428—35 11 Claims



1. A thermally insulated double wall ceramic container, comprising an inner container wall and an outer container wall, cement joining said inner and outer walls with an inner cavity formed therebetween, and insulation formed of a foaming resin of low thermal conductivity contained within said inner cavity, said outer wall having an opening for insertion of said insulation into said inner cavity.

2. A method of manufacturing a thermally insulated ceramic container, comprising the steps of:

(1) forming an inner green container wall, and an outer green container wall larger than said inner green container wall, each having an upper circumferential edge;

(2) inserting said inner wall within said outer wall, said inner and outer walls being sized so that an inner cavity is located between said inner and outer walls when said inner wall is inserted within said outer wall;

(3) forming an opening in said outer wall, said opening opening into said inner cavity when said inner wall is inserted within said outer wall;

(4) intimately joining said inner and outer walls along their upper circumferential edges with cement to form a molded green double-wall container after step (3);

(5) firing said molded green double-wall container to produce a double-wall ceramic container; and

(6) injecting a foaming resin of low thermal conductivity into said inner cavity through said opening and foaming said resin to thereby form an insulation filling said inner cavity.

4,448,826

CASKET COATING

Michael Davidian, Darien, Ill., assignor to Ameritek, Inc., Villa Park, Ill.

Filed Jul. 29, 1982, Ser. No. 402,955
Int. Cl.³ B32B 1/02, 1/06
U.S. Cl. 428—35 8 Claims

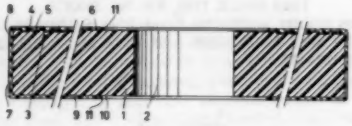
1. A casket construction, comprising an enclosed metal casket containing in use a finite quantity of organic acids, and a coating applied to the interior surface of the casket to prevent corrosion thereof, said coating comprising a film forming matrix having dispersed therein particles of an alkaline material in an amount sufficient to neutralize said finite amount of organic acids.

4,448,827

OPTICALLY READABLE INFORMATION DISC COMPRISING AN ENVELOPE OF CROSS-LINKED SYNTHETIC RESIN

Henricus G. J. A. M. Luijben, and Herman C. Meinders, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 5, 1983, Ser. No. 491,622
Claims priority, application Netherlands, Feb. 24, 1983, 8300685
Int. Cl.³ B65D 1/00; B32B 27/36
U.S. Cl. 428—35 2 Claims



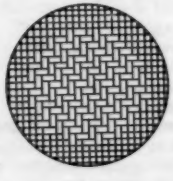
1. An optically readable information disc comprising a carrier body of polycarbonate which on one side has an optically readable information track which is provided in the surface of the carrier body and a reflection layer overlying the track, whereby the disc at playback is read by means of laser light which is focused on the information track via the carrier body of polycarbonate, characterized in that the disc comprises a mantle of a cross-linked transparent synthetic resin which extends as a closed envelope over the information track with the reflection layer present on the upper side of the disc, over the edge and over the lower side of the disc.

4,448,828

CERAMIC HONEYCOMB STRUCTURAL BODIES

Shigeru Mochida, Kasugai, and Masaru Kojima, Nagoya, both of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

Filed Jun. 29, 1981, Ser. No. 278,580
Claims priority, application Japan, Jul. 11, 1980, 55-93785
Int. Cl.³ B32B 3/20
U.S. Cl. 428—36 7 Claims



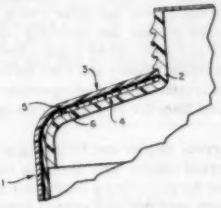
1. In a ceramic honeycomb structural body having numerous parallel channels separated by thin walls of substantially uniform thickness in which partition walls forming the channels and/or connecting portions of the partition walls are constructed so as to have flexibility, whereby thermal stress generated in the honeycomb structural body is absorbed, the improvement comprises that a given area of the outer circumferential annular portion of said ceramic honeycomb structural body has cells, each having a cell shape having a higher rigidity than the shape of cells of the inner portion.

4,448,829

METAL-PLASTIC LAMINATE TUBE CONSTRUCTION WITH PLASTIC TUBE HEAD

Andreas Köhler, Nürtingen, Fed. Rep. of Germany, assignor to Automation Industrielle SA, Switzerland

Continuation of Ser. No. 300,791, Sep. 10, 1981, abandoned. This application Jun. 3, 1983, Ser. No. 499,175
Claims priority, application Fed. Rep. of Germany, Jul. 11, 1980, 3042073
Int. Cl.³ B65D 35/10; B29C 27/02
U.S. Cl. 222—107 4 Claims



1. A tube comprising a tube body formed from a laminate having a metallic barrier layer and at least one plastic layer, a synthetic plastic tube head and a washer formed from a laminate having a metallic barrier layer and at least one plastic layer, said washer being positioned on the outer surface of the tube head shoulder, characterized in that the washer rests with its outer marginal edge directly on a cut edge of the tubular body and the butt connection thus formed is sealed.

4,448,830

CONSTRUCTION BARRIER BOARD

Joseph A. Cogliano, Pasadena, Md., assignor to W. R. Grace & Co., New York, N.Y.

Filed Jul. 28, 1982, Ser. No. 402,748
Int. Cl.³ B32B 1/04, 3/02, 3/12, 11/04
U.S. Cl. 428—40 20 Claims

1. A performed sheet-like barrier consisting essentially of
(a) a substantially rigid, porous, open-celled, substantially planar structure having a first and a second major surface and edges defining the dimensions of said structure, said structure having a thickness of from about 0.25 inch to 10 inches;
(b) an adhesive bituminous sheet formed from blends of bituminous material and a natural or synthetic rubber or resin, said sheet having a first and a second major surface and edges defining the dimensions of sheet and having a thickness of at least 0.01 inch, wherein the first major surface of said sheet is in contact with and self adhered to the substantial entire first major surface of said porous structure;
(c) a coating which is substantially non-adherent with respect to said adhesive bituminous sheet, said coating being

a removable sheet which is substantially coextensive and congruent with the second major surface of the adhesive bituminous sheet or said coating being a film of substantially non-adherent material applied to at least the substantial entire second major surface of said structure; said porous structure (a) and said sheet (b) are each substantially in the form of a quadrilateral parallelogram, each of two adjacent edges of said sheet extend beyond each of two adjacent edges of said porous structure, respectively, are in contact with each other at one corner section of the barrier and are substantially parallel to each of the two adjacent edges of said porous structure: and each of the two remaining adjacent edges of said sheet are substantially congruent with each of the two remaining adjacent edges of said porous structure, respectively.

4,448,831

LEATHERLIKE FABRICS

Frank P. Civardi, Wayne, N.J., assignor to Milliken Research Corporation, Spartanburg, S.C.

Continuation of Ser. No. 711,589, Aug. 4, 1976, Pat. No. 4,055,693, which is a continuation of Ser. No. 542,993, Jan. 22, 1977, Pat. No. 3,988,488. This application Oct. 18, 1977, Ser. No. 843,322

The portion of the term of this patent subsequent to Oct. 26, 1993, has been disclaimed.

Int. Cl.³ B32B *27/40*

U.S. Cl. 428—91 **43 Claims**

1. An imitation leather material which comprises in combination:

a. a woven fabric base sheet material, one surface of which is a napped surface and the other surface of which is not napped;

b. the napped surface of the base sheet impregnated with a cross-linked polymeric material;

c. the napped impregnated surface of the base sheet characterized by a buffed, flesh-like surface;

d. an open-cell flexible polymeric cellular-layer bonded to the other unnapped surface of the base sheet material;

e. a thin polymeric skin layer bonded to the surface of the cellular layer; and

f. the thin polymeric skin layer characterized by an imitation leather-like surface,

the fibers of said nap being bonded together by said impregnation, said bonded nap being severed, after bonding impregnation, along a multitude of short spaced lines to form spaced clumps of bonded fibers, said clumps having free ends and being brushable to and from stable upright positions, in which said free ends of the upright clumps project outwardly from the surrounding bonded nap and said fabric has a rough appearance, to bent-over positions in which said clumps merge with said surrounding bonded nap so that the fabric has a smoother appearance.

4,448,832

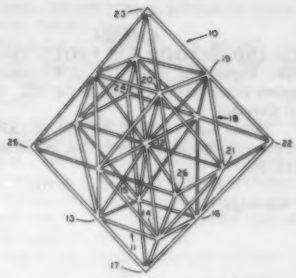
DIMENSIONALLY WOVEN COMPOSITE

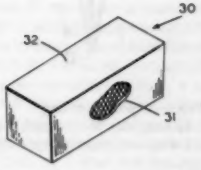
William J. Kidwell, 408 E. 5th St., Port Angeles, Wash. 98362

Filed Apr. 25, 1983, Ser. No. 488,194

Int. Cl.³ A47B *13/00*; D03D *15/00*; H01S *3/02*

U.S. Cl. 428—113 **16 Claims**





1. A three dimensional woven composite comprising at least one bundle of elongated graphite threads contiguously connected around a common point in a completely oriented central intersection, and extending outwardly therefrom to adjacent intersections of alternately spaced regular octahedronal and regular tetrahedronal linkages of a basic geometric structure having complete and incomplete intersections capable of being extended to complexity.

4,448,833

POROUS CERAMIC BODY AND A METHOD OF MANUFACTURING THE SAME

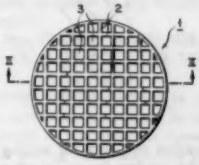
Shunzo Yamaguchi, Okazaki; Yukihisa Takeuchi, Aichi; Yasunao Miura, Kasugai, and Naoto Miwa, Tsushima, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jun. 15, 1982, Ser. No. 388,660

Claims priority, application Japan, Jun. 16, 1981, 56-92538; Jun. 16, 1981, 56-92539; Jun. 16, 1981, 56-92540

Int. Cl.³ B32B *3/12*

U.S. Cl. 428—116 **9 Claims**



1. A porous ceramic body which comprises:

a ceramic honeycomb structure provided with a large number of passages 0.5 mm to 10 mm in inner diameter; and

adhered to the walls of said honeycomb structure a ceramic layer penetrated by fine meandering holes 0.1 mm to 0.5

mm in diameter or width which holes are produced first by filling the passages of the ceramic honeycomb structure with a ceramic slurry formed of a mixture of organic solids 0.05 mm to 0.5 mm in diameter or length, and then firing an integral mass of said ceramic honeycomb structure and ceramic slurry to decompose and scatter the organic solids.

4,448,834

FOIL AND METHOD FOR PROTECTING FILM

Claus Pohl, Eschenlohe, Fed. Rep. of Germany, assignor to Geimuplast Peter Mundt GmbH. & Co. KG., Farchant, Fed. Rep. of Germany

Filed Apr. 14, 1982, Ser. No. 368,354

Claims priority, application Fed. Rep. of Germany, Apr. 15, 1981, 3115288

Int. Cl.³ B32B *3/04, 31/18*

U.S. Cl. 428—122 **8 Claims**

1. A protected film strip comprising:

(a) a developed rectangular photographic film strip having a front and back and two pairs of opposed marginal edges; and

(b) a protective foil having a pressure sensitive adhesive, said foil releasably connected along one longitudinal marginal edge of said film strip, the remaining longitudinal marginal edge of said film strip extending beyond said protective foil.

4,448,835

WINDOW WEATHER STRIPPING AND THE MANUFACTURING METHOD

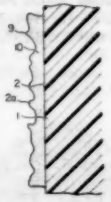
Toshiaki Yamaguchi, Chiba, Japan, assignor to Kinugawa Rubber Industrial Co., Ltd., Chiba, Japan

Filed Jul. 15, 1982, Ser. No. 398,659

Claims priority, application Japan, Aug. 31, 1981, 56-136638; Aug. 31, 1981, 56-136639

Int. Cl.³ B32B *25/08, 27/08, 27/40*

U.S. Cl. 428—147 **6 Claims**



1. Window weather stripping for sealing a gap between a movable glass and a window frame, which comprises a strip of elastic material made of rubber or a synthetic resin, said strip having a microscopic rough surface on at least one surface thereof, along which the movable glass slides, said rough surface being formed by painting a liquid-state colloidal paint having cohered colloidal particles dispersed therein, said colloidal paint being prepared by dissolving a solid-state synthetic resin in a first solvent having good solubility for the solid-state synthetic resin, and then mixing the resulting solution with a second solvent having poor solubility for the solid-state synthetic resin, as compared with the first solvent, and drying the paint.

4,448,836

METHOD FOR PRETREATING THERMOPLASTIC SUBSTRATES CONTAINING CARBONAMIDE GROUPS IN THE PREPARATION OF STRONGLY ADHERING METAL COATINGS

Horst Gätzschmann, Schermbeck; Herbert Bertels, Marl; Hubertus Häfner, Marl, and Alfred Schmid, Marl, all of Fed. Rep. of Germany, assignors to Chemische Werke Hüls AG, Marl, Fed. Rep. of Germany

Filed Aug. 18, 1983, Ser. No. 524,359

Claims priority, application Fed. Rep. of Germany, Sep. 16, 1982, 3234363

Int. Cl.³ B32B *3/00;* **C25D** *5/00;* **B05D** *3/04;* **B29C** *17/08*

U.S. Cl. 428—164 **11 Claims**

1. In a process for pretreating thermoplastic substrates, seeding with an activator system, depositing an electrically conductive layer thereon, and galvanically depositing a metal coating thereon, wherein said thermoplastic substrates are polymers containing carbonamide groups and an inorganic fine particulate adhesion filler, said polymer having at least 10 aliphatically bound carbon atoms per carbonamide group, the improvement comprising:

carrying out said pretreating by pickling in at least first and second separate partial steps separated by a rinsing procedure, where said first partial step, namely predipping, is performed in 50 to 96% sulfuric acid having a surface tension not more than about 25 mN/m at 20° C., and drying said pretreated thermoplastic substrate at temperatures from 70° C. to the limit of thermal dimensional stability, said drying step being carried out after said seeding or said depositing and prior to said galvanically depositing metal.

4,448,837

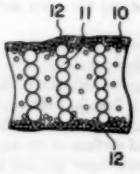
PRESSURE-SENSITIVE CONDUCTIVE ELASTIC SHEET

Eiichi Ikeda, Hatano; Ikuo Kayama, Tama, and Masahiro Izaki, Kawasaki, all of Japan, assignors to Oki Densen Kabushiki Kaisha, Kanagawa, Japan

Filed Jul. 19, 1982, Ser. No. 399,695

Int. Cl.³ B32B *7/02;* **B05D** *3/14;* **C09J** *7/02*

U.S. Cl. 428—215 **10 Claims**



1. A pressure-sensitive, conductive elastic sheet, which comprises:

(a) coarse ferromagnetic conductive particles of from 30 to 150 microns in diameter;

(b) fine ferromagnetic conductive particles of 10 microns or less in diameter, said fine particles being mixed with said coarse particles at a mixture ratio of from 1:0.1 to 1:1 by weight; and

(c) elastomer mixed with said coarse and fine particles at a mixture ratio of from 1:0.5 to 1:0.8 by weight, said coarse ferromagnetic particles being aligned in the direction

perpendicular to the plane of the sheet through the interior thereof and said fine ferromagnetic particles being dispersed near at least one surface thereof,

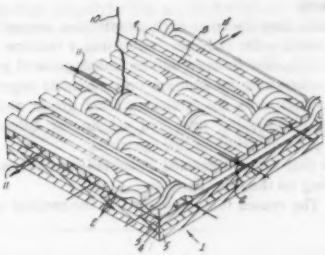
whereby the pressure at which an electrically conductive pathway is formed through the sheet is almost constant irrespective of contact area to which pressure is applied or increases with increasing contact area.

4,448,838

GRAPHITE FIBER REINFORCED LAMINATE STRUCTURE CAPABLE OF WITHSTANDING LIGHTNING STRIKES

David H. McClenahan, Reno, Nev., and John A. Plumer, Dalton, Mass., assignors to Lear Fan Corp., Reno, Nev.

Filed Sep. 4, 1981, Ser. No. 299,346
Int. Cl.³ B32B *9/00*
U.S. Cl. 428—251 **14 Claims**



1. A graphite fiber reinforced laminate structure capable of withstanding the damaging effects of lightning strikes, comprising at least one graphite fiber bonded ply having metal wire or metal coated filament woven therein in the warp and fill directions, said metal wire or filament being compatible with said bonded graphite fibers and being periodically at the outer surface of said laminate, to intensify locally the electrical field upon approach of a lightning arc, to disperse the lightning arc into a plurality of current filaments and facilitate distribution of electric currents throughout said laminate.

4,448,839

METHOD OF SIZING HYDROPHOBIC YARN

Hal C. Morris, Warminster, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 311,561, Oct. 16, 1981, abandoned, and Ser. No. 202,543, Oct. 31, 1980. This application Oct. 20, 1981, Ser. No. 312,761
The portion of the term of this patent subsequent to Jul. 19, 2000, has been disclaimed.
Int. Cl.³ B32B *7/00*; B65B *33/00*; B05D *3/02*
U.S. Cl. 428—267 **13 Claims**

1. A method of sizing a hydrophobic yarn for weaving comprising the steps of (1) applying thereto an acid pH latex of a free radical initiated vinyl polymer having a weight average molecular weight of from about 300,000 to about 2,500,000; said polymer, in dried film form, being hydrophobic and not redispersible in a solution at a low pH and being redispersible in an alkaline aqueous medium; said polymer being of monomers having a solubility parameter from about 9.0 to about 9.5, a T_g from about −20° C. and comprising 8% to about 14%, by weight, alpha, beta-ethylenically unsaturated acid, and (2) drying the yarn.

4,448,840

METHOD FOR MANUFACTURING A RUBBER SHEET WHICH IS ELECTRICALLY INSULATING AND THERMALLY RADIATING AND RUBBER SHEETS MADE THEREFROM WITH IMPROVE RESISTANCE TO FLEXURAL FATIGUE

Takao Matsushita, Kisaraza, Japan, assignor to Toray Silicone Company, Ltd., Tokyo, Japan

Filed Jun. 13, 1983, Ser. No. 503,933
Claims priority, application Japan, Jun. 14, 1982, 57-101896
Int. Cl.³ B32B *7/00*; B05D *1/36*
U.S. Cl. 428—266 **19 Claims**

1. A method for manufacturing a rubber sheet which is electrically insulating and thermally radiating,

comprising treating a network insulating material with an alkoxysilane, then coating the resulting network insulating material with a fluid silicone rubber composition, and then curing said composition, where the fluid silicone rubber composition consists essentially of

(a) 100 parts by weight of a polyorganosiloxane having a viscosity at 25° C. of from 0.1 to 100 Pa·s and having an average unit formula

$$R_aR'_bSiO_{(4-a-b)/2}$$

wherein each R represents a monovalent hydrocarbon radical free of aliphatic unsaturation or a halogenated monovalent hydrocarbon radical free of aliphatic unsaturation, each R′ represents a monovalent aliphatically unsaturated hydrocarbon radical, a has a value from 1.90 to 2.05, b has a value from 0.005 to 0.1, and the sum of a+b has a value from 1.91 to 2.06,

(b) a polyorganohydrogensiloxane having a viscosity at 25° C. of 0.007 to 5 Pa·s and having an average unit formula

$$R_cH_dSiO_{(4-c-d)/2}$$

wherein R is defined above, the sum of c+d has a value of 1.001 to 3, there is at least two silicon-bonded hydrogen atoms per molecule, and said polyorganohydrogensiloxane is present in an amount such that there are 0.5 to 10 equivalents of silicon-bonded hydrogen atoms per equivalent of aliphatically unsaturated hydrocarbon radical in (a),

(c) from 100 to 500 parts by weight of alumina powder, and

(d) a catalytic quantity of a platinum-group compound as a catalyst.

12. An electrically insulating and thermally radiating rubber sheet prepared in accordance with the method of claim 1.

4,448,841

FLAME RETARDANT COMPOSITIONS FOR TEXTILES AND TREATED TEXTILES

Cyril Glass; Leslie G. Hursey, and Ronald Inness-Turnbull, all of London, England, assignors to The Sargom Company Limited, London, England

Filed Sep. 30, 1982, Ser. No. 428,559
Int. Cl.³ B27K *3/00*; B32B *7/00*
U.S. Cl. 428—270 **11 Claims**

1. A flame retardant composition for in situ treatment of textiles and textile products comprising in admixture: 9.5 to 15.5 percent by weight of a component consisting of at least one ammonium salt having flame retardant properties, 2.0 to 3.0 percent by weight of a water-soluble amide which will decompose to give ammonia when heated to a temperature of 100° C. to 200° C., and aqueous acid in a concentration of 1.5 to 2.0 percent (by weight) of the composition and with the pH of the composition being 3 to 4.5 thereby ensuring that the composition is sufficiently diluted for application to a fabric without degrading it.

4,448,842

MAGNETIC RECORDING MEDIUM

Nobutaka Yamaguchi; Nobuo Tsuji, and Masaaki Fujiyama, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 4, 1982, Ser. No. 345,848
Claims priority, application Japan, Feb. 4, 1981, 56-15389
Int. Cl.³ G11B 5/70
U.S. Cl. 428—329 17 Claims

1. A magnetic recording medium comprising:

a non-magnetic support base; and

a magnetic layer formed on a surface of said non-magnetic support base, said magnetic layer comprising magnetic particles dispersed within a binder, an abrasive having a Mohs hardness of 6 or more, calcium carbonate, an aliphatic acid in an amount of from 0.1 to 2 weight percent of the magnetic particles and an aliphatic acid ester in an amount of 0.1 to 2 weight percent of the magnetic particles.

4,448,843

MAGNETIC RECORDING MEDIUM

Yasuyuki Yamada; Ryuji Shirahata; Akio Yanai, and Tatsuji Kitamoto, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 10, 1981, Ser. No. 252,762
Claims priority, application Japan, Apr. 10, 1980, 55-47176; Apr. 10, 1980, 55-47177; Apr. 28, 1980, 55-56425
Int. Cl.³ G11B 5/72
U.S. Cl. 428—336 9 Claims

1. A magnetic recording medium comprising

(a) a support,

(b) a vapor-deposited ferromagnetic metal layer on said support(a), and

(c) a protective layer comprising mainly one of (i) a polyurethane resin, (ii) a vinylidene chloride copolymer or (iii) a cellulose derivative on the surface of said vapor-deposited ferromagnetic metal layer (b), said protective layer having a thickness of from about 0.002 to 0.3 μm.

4,448,844

HEAT RESISTANT RESIN AND PROCESS FOR PRODUCING THE SAME

Yuichi Osada; Shozo Kasai; Yasunori Okada; Isao Uchigasaki, all of Hitachi; Toyoji Oshima, Higashikurume; Yoshiyuki Mukoyama, Hitachi, and Hiroshi Nishizawa, Kitaibaraki, all of Japan, assignors to Hitachi Chemical Co., Ltd., Tokyo, Japan

Filed Jul. 28, 1983, Ser. No. 518,109
Claims priority, application Japan, Apr. 6, 1981, 56-52108
Int. Cl.³ D02G 3/00; B32B 15/08; H01B 7/00
U.S. Cl. 428—375 8 Claims

1. An insulated wire comprising a coating of a heat resistant resin composition on an electric conductor; said heat resistant resin composition comprising a heat resistant resin and a phenolic solvent; the heat resistant resin being produced by reacting with heating

(A) a polyamideimide resin obtained by reacting in a phenolic solvent the following components (a) to (e):

(a) a polyisocyanate containing an isocyanurate ring in an amount of 0 to 30 equivalent percents based on the total isocyanate equivalent,

(b) a diisocyanate free of an isocyanurate ring,

(c) a lactam,

(d) a tricarboxylic acid anhydride, and

(e) a compound different from the component (d) and selected from the group consisting of trimesic acid, tris(2-carboxyethyl) isocyanurate, 3,3',4,4'-butanetricarboxylic acid, anhydrides thereof and a reaction product of trimellitic anhydride and a trimer of isophorone diisocyanate or a trimer of tolylene diisocyanate, in an amount of 0 to 30 equivalent percents based on the total carboxyl equivalent, with

(B) an alcohol component selected from the group consisting of a di- or higher polyhydric alcohol and a mixture of a di- or higher polyhydric alcohol with a monohydric alcohol, and

(C) an acid component selected from the group consisting of a divalent or higher polyvalent carboxylic acid, an ester thereof and an anhydride thereof.

4,448,845

HALOGENATED POLAR POLYMER TREATMENT OF INORGANIC FILLERS

James J. Jakubowski; Victor E. Meyer, and Ronald R. Pelletier, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Sep. 29, 1982, Ser. No. 426,558
Int. Cl.³ B05D 7/00
U.S. Cl. 428—404 10 Claims

1. A method for coating a particulate filler comprising the steps of:

contacting the filler with an effective amount of a halogenated polar polymer comprising a reaction product of a molecular halogen and an unhalogenated polar polymer comprising an addition polymerizable organic monomer which does not contain an acid group; and an addition polymerizable acid; and mixing the halogenated polar polymer with the filler particles

such that the halogenated polar polymer forms an adherent coating on the filler particle.

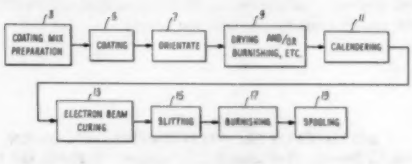
6. The coated filler produced by the method of claim 1.

4,448,846

RADIATION-CURED MAGNETIC MEDIA AND PROCESS FOR MAKING SAME

Hao-Jan Chang, Santa Clara, and Akihiro Nishimura, Cupertino, both of Calif., assignors to Ampex Corporation, Redwood City, Calif.

Continuation-in-part of Ser. No. 189,979, Sep. 22, 1980, abandoned. This application Oct. 8, 1981, Ser. No. 309,632
Int. Cl.³ H01F 10/02
U.S. Cl. 428—412 11 Claims



1. A magnetic medium comprising:

(a) a nonmagnetic substrate coated with

(b) a magnetic binder composition comprising

(i) a radiation-cured mixture of a high molecular weight fully polymerized thermoplastic polymer comprising a styrene-butadiene copolymer, acrylonitrile-butadiene copolymer, vinylacetate-vinylchloride copolymer, polyester, polyamide, polycarbonate, polysulfone, polyacrylate, polyacrylic acid, polyvinylacetal, polyvinylbutyral, polyurethane, epoxy or phenoxy resin, having a weight average molecular weight of at least 50,000, and a radiation-curable acrylate prepolymer having a weight average molecular weight of less than 10,000, wherein the ratio of high molecular weight thermoplastic polymer to acrylate prepolymer is from 50:50 to 90:10 on a polymer solids basis by weight, and

(ii) magnetic particles dispersed in the radiation-cured mixture.

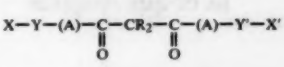
4,448,847

PROCESS FOR IMPROVING STEEL-EPOXY ADHESION

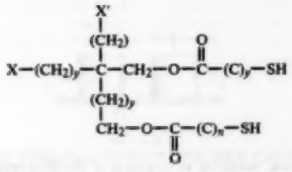
James P. Bell, Storrs, Conn., and Anthony J. De Nicola, Jr., Newark, Del., assignors to Shell Oil Company, Houston, Tex.

Filed May 28, 1982, Ser. No. 382,986
Int. Cl.³ B32B 27/38
U.S. Cl. 428—413 18 Claims

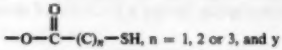
1. A method for improving the adhesion of epoxy resins to steel substrates which comprises (1) chemically removing the oxide layer from said substrate and (2) pretreating said cleaned substrate with a solution of at least one coupling agent selected from the group consisting of β-diketones of the general formula



wherein R is H or an alkyl radical, Y and Y' are each (symetrical or assymetrical) aliphatic, cycloaliphatic or aromatic radicals, A is O, S, N, or CH_2, X and X' are each an aromatic OH, carboxyl, glycidyl, glycidyl ether, glycidyl ester or $—CH_2OH$ group and a mercaptoester of the general formula:



wherein X and X' are each H or



—O—C—(C)$_n$—SH, n = 1, 2 or 3, and y = 0, 1, 2 or 3.

4,448,848

MAGNETIC RECORDING MEDIUM AND PROCESS FOR PRODUCING THE SAME

Tsutomu Okita, and Kyoichi Naruo, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 4, 1982, Ser. No. 345,903
Claims priority, application Japan, Feb. 4, 1981, 56-15391
Int. Cl.³ H01F 10/02
U.S. Cl. 428—447 9 Claims

1. A process for producing a magnetic recording medium which comprises the steps of applying onto a non-magnetic base a magnetic coating composition consisting essentially of (1) a compound having a carbon-carbon unsaturated bond polymerizable by electron beams, (2) a coupling agent having a carbon-carbon unsaturated bond selected from the group consisting of (a) a silane coupling agent wherein one terminal group of the silane molecule is a hydrogen or alkoxy and the other terminal group is an alkoxy group having an unsaturated group, and (b) a titanate coupling agent wherein at least one substituent in the titanate molecule is an alkoxy group and at least one other substituent is a substituent having an unsaturated bond, (3) ferromagnetic particles and (4) an organic solvent, and curing the applied magnetic coating composition by irradiation with electron beams.

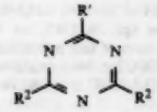
4,448,849

HYDROXYLALKYLMELAMINE CONTAINING RESINS AND THEIR USE IN HEAT AND PRESSURE CONSOLIDATED LAMINATES

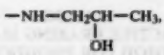
Ronald J. Keeling; Jin-Young K. Roe, and Henry C. Mollmann, all of Cincinnati, Ohio, assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 421,950, Sep. 23, 1982, Pat. No. 4,242,261.
This application Sep. 12, 1983, Ser. No. 518,253
Int. Cl.³ B32B 27/42, 27/08
U.S. Cl. 428—503 9 Claims

1. A heat and pressure consolidated laminate comprising
(1) a substrate
(2) a decor sheet and, optionally,
(3) an overlay sheet
wherein at least one of (1), (2), and (3) is impregnated with an impregnant comprising:
(A) a hydroxyalkylmelamine/formaldehyde reaction product having a molar ratio of hydroxyalkylmelamine to formaldehyde of from about 1:0.05 to about 1:3 respectively, or
(B) a blend of A, above, and a melamine/formaldehyde resin, the ratio of A to melamine/formaldehyde resin ranging from about 20:1 to about 1:20, respectively, and the ratio of melamine to formaldehyde ranging from about 1:1 to 1:3, respectively, or
(C) a blend of a hydroxy alkyl melamine and a melamine/-formaldehyde resin, the ratio of hydroxyalkyl melamine to melamine/formaldehyde resin ranging from about 1:1 to about 1:20, respectively, and the ratio of melamine to formaldehyde ranging from about 1:1 to about 1:3, respectively,
said hydroxyalkyl melamine having the formula



wherein R' is a C_1–C_8 linear or branched chain alkyl, a C_6–C_{10} aryl, or R^2 and R^2 is $—NH_2$, $—NH(CH_2)_xOH$ or



wherein x is 3–8, inclusive and at least one R^2 is a hydroxyalkylamine group.

4,448,850

VINYL ACETATE POLYMERS AND LATEX COMPOSITIONS CONTAINING SAME

Donald A. Upson, Webster, and David J. Steklenski, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 23, 1982, Ser. No. 401,205
Int. Cl.³ B32B 27/28, 27/30; G03C 5/54, 1/76
U.S. Cl. 428—510 9 Claims

1. An element comprising a support having thereon a layer comprising a polymer characterized in that the polymer has random recurring units:

$-(A)_w-(B)_x-(C)_y$ and $-(D)_z$

wherein;
A represents polymerized vinyl acetate;
B represents a polymerized acrylate or methacrylate monomer capable of copolymerization with vinyl acetate;
C represents a polymerized monomer selected from the

group consisting of methacrylic acid, itaconic acid and vinylbenzoic acid;

D represents a polymerized cationically charged copolymerizable monomer;

w represents from 20 to 85 weight percent;

x represents from 5 to 65 weight percent;

y represents from 5 to 50 weight percent and,

z represents from 2 to 10 weight percent.

4,448,851

HOMOGENEOUS LOW MELTING POINT COPPER BASED ALLOYS

Debasis Bose, Randolph; Amitava Datta, Morris Township, Morris County, and Nicholas J. DeCristofaro, Chatham, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Sep. 20, 1982, Ser. No. 420,550

The portion of the term of this patent subsequent to May 15, 2001, has been disclaimed.

Int. Cl.³ C22C *9/00*; B23K *35/30*

U.S. Cl. 428—606 **14 Claims**

6. A homogeneous brazing foil having a composition consisting essentially of about 2.5 to 11 atom percent tin and about 11 to 15 atom percent boron, the balance being copper and incidental impurities and the total of copper and tin ranging from about 85 to 89 atom percent.

4,448,852

HOMOGENEOUS LOW MELTING POINT COPPER BASED ALLOYS

Debasis Bose, Randolph; Amitava Datta, Morris Township, Morris County, and Nicholas J. DeCristofaro, Chatham, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 420,550, Sep. 20, 1982. This application Apr. 26, 1983, Ser. No. 488,858

The portion of the term of this patent subsequent to May 15, 2001, has been disclaimed.

Int. Cl.³ C22C *9/00*; B23K *35/30*

U.S. Cl. 428—606 **16 Claims**

6. A metal alloy composition as recited in claim 1, consisting essentially of about 67.1 atom percent copper, about 10.7 atom percent nickel, about 10.6 atom percent tin and about 11.6 atom percent boron.

4,448,853

LAYERED ACTIVE BRAZING MATERIAL AND METHOD FOR PRODUCING IT

Meich Fischer, Dietikon, and Kurt Brunner, Wettingen, both of Switzerland, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Apr. 15, 1981, Ser. No. 254,511

Int. Cl.³ B23K *35/20*; C22C *9/00, 14/00*

U.S. Cl. 428—607 **6 Claims**

1. A layered active brazing material being in the form of two thin foils selected from the group consisting of binary and ternary copper alloys with at least 40 atomic percent copper selected from the group consisting of binary copper/titanium alloys with 40 to 85 atomic percent copper with the remainder titanium,

copper/titanium/germanium alloys,

copper/titanium/silicon alloys,

copper/zirconium/silicon alloys, and

copper/zirconium/germanium alloys;

nickel/titanium/silicon alloys;

nickel/titanium/germanium alloys;

zirconium/aluminum/silicon alloys;

zirconium/aluminum/germanium alloys;

zirconium/iron/silicon alloys;

zirconium/iron/germanium alloys;

zirconium/nickel/silicon alloys; and

zirconium/nickel/germanium alloys; with structure ranging from microcrystalline to amorphous, said foils being applied to both sides of a flat ductile metallic carrier, said carrier being in the form of a ribbon or sheet and consisting of copper, a copper alloy, tantalum, zirconium, niobium, molybdenum, aluminum, or an aluminum alloy.

4,448,854

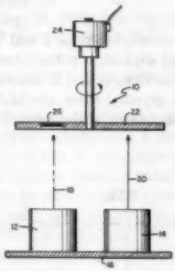
COHERENT MULTILAYER CRYSTALS AND METHOD OF MAKING

Ivan K. Schuller, Woodridge, Ill., and Charles M. Falco, Tucson, Ariz., assignors to The United States of America as represented by the Department of Energy, Washington, D.C.

Continuation-in-part of Ser. No. 202,083, Oct. 30, 1980, abandoned. This application Nov. 15, 1982, Ser. No. 441,900

Int. Cl.³ B32B *15/04, 15/20*

U.S. Cl. 428—611 **9 Claims**



1. A new material comprising a multilayered crystalline structure which is coherent perpendicular to the layers, the structure consisting of a plurality of parallel, ultrathin, alternating, crystalline, epitaxial layers of two different elements, each layer being a single element having a thickness of about 2 to 100 Å.

4,448,855

HEAT RESISTANT REFLECTOR

Susumu Senaha; Suizo Kyo; Susumu Shimomura; Akira Akagami; Hiroshi Imai; Akira Ohno; Shitomi Katayama, and Suguru Nomura, all of Kanagawa, Japan, assignors to Kiko Co., Ltd. and NHK Spring Co., Ltd., both of Kanagawa, Japan

Filed Nov. 13, 1979, Ser. No. 93,472

Claims priority, application Japan, Nov. 13, 1978, 53-138906

Int. Cl.³ G02B *5/08*; B32B *15/04*

U.S. Cl. 428—632 **8 Claims**

1. A heat resistant reflector consisting essentially of a vacuum deposited light reflective metal layer disposed directly on (1) a metallic substrate or (2) a non-metallic, non-resinous substrate and a light transmittable pre-existing ceramic vacuum deposited protective layer having low light refractivity and absorption further disposed on said substrate.

4,448,856

BATTERY AND FUEL CELL ELECTRODES CONTAINING STAINLESS STEEL CHARGING ADDITIVE

David Zuckerbrod, Pittsburgh, and Ann Gibney, Monroeville, both of Pa., assignors to U.S. Department of Energy, Washington, D.C.

Filed Mar. 14, 1983, Ser. No. 474,933

Int. Cl.³ H01M *4/96*

U.S. Cl. 429—27 **10 Claims**

1. An electrode comprising:

A. a hydrophilic layer comprising:

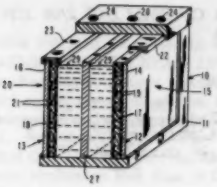
(1) a hydrophilic composite comprising:

i. 1 part by weight of carbon particles where at least about 50

wt.% of the carbon particles have a total surface area of from about 30 to about 300 sq. meters/gram;

ii. about 0.2 to about 1 part by weight of stainless steel particles;

iii. an effective amount of a bonding/nonwetting agent; and



iv. an effective amount of a catalyst for decomposition of perhydroxides; and

(2) at least one metal current collector contacting said composite to provide a hydrophilic layer, and

B. a hydrophobic layer pressed to said hydrophilic layer.

4,448,857

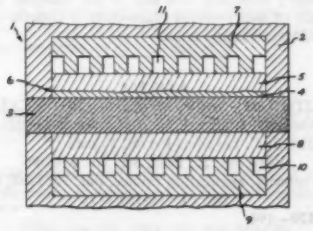
CATHODE COMPOSITE FOR MOLTEN CARBONATE FUEL CELL

Charles D. Iacovangelo, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 10, 1982, Ser. No. 416,448

Int. Cl.³ H01M 4/86

U.S. Cl. 429—41 **5 Claims**



1. A cathode composite useful for a molten carbonate fuel cell comprised of a porous sintered cathode having a porous sintered bubble pressure barrier integrally sintered to one face thereof covering said face and being coextensive therewith, said cathode composite having a pore volume ranging from about 25% by volume to about 75% by volume of the total volume of said composite, said cathode having a pore volume ranging from about 25% by volume to about 75% by volume of the total volume of said cathode, said pressure barrier having a pore volume ranging from about 25% by volume to about 75% by volume of the total volume of said barrier, said cathode having a median pore size ranging from in excess of one micron to about 10 microns, said barrier having a median pore size significantly smaller than that of said cathode, said cathode and said pressure barrier being comprised of from about 10 weight % to about 90 weight % $Li_xNi_{(1-x)}O$/balance $Li_yCu_{(1-y)}O$, where x and y each ranges from about 0.005 to about 0.25.

4,448,858

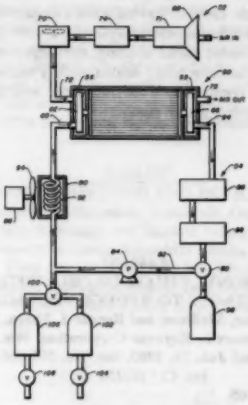
CHEMICALLY RECHARGEABLE BATTERY

James E. Graf, Arcadia, and John J. Rowlette, Monrovia, both of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Continuation-in-part of Ser. No. 362,087, Mar. 26, 1982. This application Mar. 17, 1983, Ser. No. 476,318

Int. Cl.³ H01M 6/50

U.S. Cl. 429—49 **10 Claims**



1. A system for recharging a metal-oxidant gas battery having an electrolyte inlet and an electrolyte outlet comprising:

a fluid circuit for connection to said inlet and outlet containing:

electrolyte storage means;

reservoir means containing a supply of fluid reducing agent;

pump means for flowing the electrolyte into and out of the battery and for flowing the fluid reducing agent through the battery in contact with the surfaces of oxidized, discharged electrodes; and

valve means for sequentially flowing said reducing agent into the battery and when spent from the battery, for removing electrolyte from and for refilling the battery with electrolyte.

4,448,859

DEACTIVATION OF THIONYL CHLORIDE CELLS

Wayne S. Bishop, Centerville, and Richard A. Marsh, Tipp City, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 14, 1983, Ser. No. 504,354

Int. Cl.³ H01M 6/50, 6/52

U.S. Cl. 429—50 **10 Claims**

1. A method for deactivating a thionyl chloride cell which comprises the steps of:

(a) electrically discharging that said cell;

(b) introducing a solution of aluminum chloride dissolved in thionyl chloride into said cell;

(c) allowing said solution to react with the negative active material in said cell;

(d) withdrawing at least a portion of said solution from said cell; and

(e) repeating steps (b), (c) and (d) until the desired degree of deactivation is achieved.

4,448,860

GALVANIC ELEMENT WITH INTEGRAL GETTER

Ulrich von Alpen, Schlossborn, and Subash C. Nijhawan, Kronberg, both of Fed. Rep. of Germany, assignors to Varta Batterie Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Aug. 30, 1982, Ser. No. 412,948

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1981, 3136578

Int. Cl.³ H01M *10/34*

U.S. Cl. 429—57 7 Claims

1. In a galvanic element having a solid negative alkali metal electrode, a non-aqueous electrolyte and a solid positive electrode within a sealed metal housing, the improvement which comprises said housing being sealed with a seal-sealing composite polymer comprising a thermoplastic synthetic material and a gas absorbing getter material.

4,448,861

LITHIUM-THIONYL CHLORIDE CELL WITH LITHIUM SURFACE ALLOYS TO REDUCE VOLTAGE DELAY

Niles A. Fleischer, Madison, and Ronald J. Ekern, Verona, both of Wis., assignors to Rayovac Corporation, Wis.

Filed Jun. 24, 1983, Ser. No. 507,666

Int. Cl.³ H01M *4/36*

U.S. Cl. 429—105 6 Claims

1. In a lithium-thionyl chloride cell, the improvement for reducing voltage delay which comprises using an anode consisting of a lithium substrate having a thin lithium-aluminum alloy at the anode surface exposed to electrolyte.

2. A lithium thionyl chloride cell in accordance with claim 1 wherein said anode surface is formed by initially laminating a thin aluminum foil to said lithium substrate.

4,448,862

LEAD STORAGE BATTERY

Heinz Schulte, and Werner Kirchhoff, both of Hagen, Fed. Rep. of Germany, assignors to Varta Batterie Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Feb. 6, 1981, Ser. No. 232,386

Claims priority, application Fed. Rep. of Germany, Feb. 13, 1980, 3005297

Int. Cl.³ H01M *2/14*

U.S. Cl. 429—136 9 Claims

1. A lead storage battery with positive and negative electrode plates between which are positioned the microporous separators, comprising:

on each separator, an additional hydrogen and acid resistant layer of high porosity glass wool mat applied only to the side facing the negative plate.

4,448,863

ELECTRIC STORAGE BATTERIES

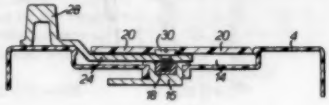
Christopher Terrell, London, England, assignor to Chloride Group Limited, London, England

Filed Nov. 4, 1981, Ser. No. 318,134

Claims priority, application United Kingdom, Nov. 5, 1980, 8035534

Int. Cl.³ H01M *2/02, 2/08, 2/26*

U.S. Cl. 429—178 13 Claims



1. An electric storage battery kit comprising:

(a) a container having a plurality of walls, one of said walls having an outer surface and means defining two spaced elongate recesses, each of said spaced elongate recesses having two ends and an overhanging edge;

(b) two battery terminals, each of said battery terminals being accommodated in a respective one of said spaced elongate recesses and not extending beyond said outer surface of said one of said walls;

(c) two terminal connectors, each of said terminal connectors including:

(i) an elongate portion which is adapted to be releasably connected both mechanically and electrically to a respective one of said battery terminals and

(ii) a current take-off portion adapted to be releasably connected to a battery cable; and

(d) said terminal connectors and said recesses being shaped and dimensioned so that:

(i) when said terminal connectors are connected to said battery terminals, at least a part of each of said elongate portions is accommodated in said respective one of said spaced elongate recesses and said current take-off portions extend above said one of said walls, and

(ii) when said terminal connectors are connected to said battery terminals, one end of the elongate portion of each of said terminal connectors is underneath one of said overhanging edges.

4,448,864

LITHIUM - MANGANESE DIOXIDE CELL

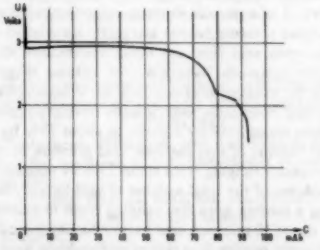
Michel Broussely, Liguge, France, assignor to Societe Anonyme dite: GIPELEC, Levallois-Perret, France

Filed Jul. 22, 1983, Ser. No. 516,386

Claims priority, application France, Jul. 30, 1982, 82 13324

Int. Cl.³ H01M *6/14*

U.S. Cl. 429—194 5 Claims



1. A lithium-manganese dioxide cell having an electrolyte which includes a lithium salt dissolved in a solvent chosen from the group constituted by esters, ethers, and mixtures

thereof, the improvement wherein the manganese dioxide is mixed with copper oxyphosphate suitable for conferring a second voltage plateau on the cell discharge curve, the proportion by weight of the copper oxyphosphate being determined by the capacity required at said second discharge voltage plateau.

4,448,865

SHADOW PROJECTION MASK FOR ION IMPLANTATION AND ION BEAM LITHOGRAPHY

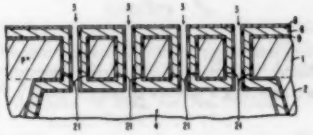
Harald Bohlen, Boeblingen; Johann Greschner, Pliezhausen, and Peter Nehmiz, Stuttgart, all of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.J.

Filed Oct. 12, 1982, Ser. No. 434,074

Claims priority, application Fed. Rep. of Germany, Oct. 30, 1981, 81109370

Int. Cl.³ G03F 9/00

U.S. Cl. 430—5 **13 Claims**



1. A projection mask comprising; a thin P+-doped silicon layer having through holes adapted to the mask pattern, a grid supporting said silicon layer in areas where holes are not present, said grid comprising silicon ribs doped differently from the silicon layer and having on at least an upper side facing away from the grid an ion-absorbing layer, said grid on at least the surface exposed to ion radiation being electrically and thermally conductive, said silicon layer and said grid defining a silicon frame, a coating disposed on said frame where it is to be exposed to the ion beams having at least such a thickness, taking into consideration the ion energy and the characteristics of the covering material, preventing ion penetration into the silicon, said mask surface exposed to the ion radiation comprising a material resistant to the ion attack, and said silicon frame coating not causing mask deformation due to temperature and/or inherent tensions of the coating.

4,448,866

METHOD OF ELECTROPHOTOGRAPHICALLY MANUFACTURING A DISPLAY SCREEN FOR A COLOR DISPLAY TUBE

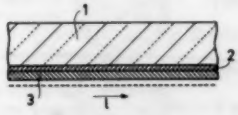
Henri G. Olieslagers, and Frederik B. Melgert, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 19, 1982, Ser. No. 369,949

Claims priority, application Netherlands, May 7, 1981, 8102224

Int. Cl.³ G03F 5/00, 7/00

U.S. Cl. 430—24 **1 Claim**



1. In a method of manufacturing a display screen on a color display tube window including the steps of:

(a) providing an electrically conductive layer on the window;

(b) providing a photoconductive layer on the electrically conductive layer;

(c) establishing a substantially uniform electric charge on the photoconductive layer;

(d) exosing selected areas of the photoconductive layer with light to effect conductive of the charge away from said areas, thereby forming a latent charge image;

(e) applying to the photoconductive layer a solution containing particles charged to the opposite polarity of the charge forming the latent image, thereby effecting deposition of said charged particles on the photoconductive layer in a pattern corresponding to said charge image; and

(f) blow drying the pattern of particles;

the improvement comprising increasing particle adhesion by uniformly exposing with light the portions of the photoconductive layer lying between the deposited pattern of particles to effect conduction of any remaining charge away from said portions, said uniform exposure being made before the drying step is completed.

4,448,867

IMAGE FORMING METHOD AND DEVICE FOR SAME

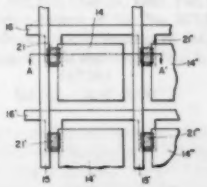
Yukitoshi Ohkubo, Yokohama; Yoshiyuki Osada, Yokosuka; Masao Sugata, Kawasaki, and Takashi Nakagiri, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 18, 1982, Ser. No. 340,459

Claims priority, application Japan, Jan. 26, 1981, 56-9954

Int. Cl.³ G03G 13/00; G11C 13/00

U.S. Cl. 430—31 **33 Claims**



1. A method for forming images which comprises:

providing an array of dot-like electrodes, each dot-like electrode electrically connected to a transistor with a gate electrode having an on-state and an off-state and a source electrode;

applying scanning signals by line-at-a-time scanning to said gate electrodes to provide the on-state thereof;

applying image signals to said source electrodes during the on-state of said gate electrodes to generate a voltage or electric charge in the corresponding dot-like electrodes; and developing a toner image on said dot-like electrodes charged by said image signals by electrically attaching a toner to said charged dot-like electrodes in said array.

4,448,868

ELECTROPHOTOGRAPHIC PHOTORECEPTOR WITH HYDRAZONE DERIVATIVE

Shinichi Suzuki; Kiyoshi Sawada, both of Hachioji; Akira Kinoshita; Osamu Sasaki, both of Hino, and Satoshi Goto, Hachioji, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Feb. 4, 1983, Ser. No. 463,974

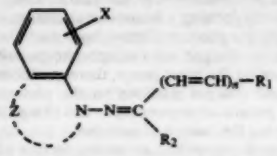
Claims priority, application Japan, Feb. 5, 1982, 57/17765; Mar. 27, 1982, 57/49394

Int. Cl.³ G03G 5/06, 5/14

U.S. Cl. 430—58 **30 Claims**

1. An electrophotographic photoreceptor having formed on

an electrically conductive support a light-sensitive layer containing a hydrazone derivative of formula (I):



(I)

wherein Z is a divalent hydrocarbon group necessary to form in conjunction with a nitrogen atom a 5- or 6-membered nitrogen-containing heterocyclic ring condensed to the benzene ring; R_1 is an aryl group or a heterocyclic group; R_2 is a hydrogen atom, an alkyl group or an aryl group; X is a hydrogen atom, a halogen atom, an alkyl group, a substituted amino group, an alkoxy group or a cyano group; and n is an integer of 0 or 1.

5. A photoreceptor according to claim 1, wherein said light-sensitive layer is an assembly of a carrier generation layer and a carrier transporting layer.

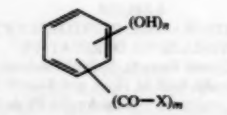
4,448,869

PHOTOCONDUCTIVE COMPOSITION AND ELECTROPHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL USING SAID COMPOSITION

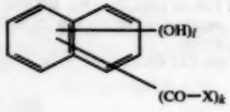
Syun-ichi Kondo; Kenji Sano, and Hideo Sato, all of Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 4, 1983, Ser. No. 472,305
Claims priority, application Japan, Mar. 4, 1982, 57-33082
Int. Cl.³ G03G *5/05, 5/09*
U.S. Cl. 430—83 **19 Claims**

1. An electrophotoconductive composition comprising an organic photoconductive substance and at least one compound represented by the general formula (I) or (II):



(I)



(II)

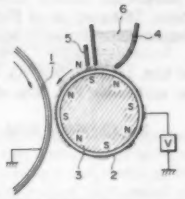
wherein X is an alkyl group, a substituted alkyl group, an aryl group, a substituted aryl group, an alkoxyl group, a substituted alkoxyl group, an aryloxyl group, or a substituted aryloxyl group, n and m each represent an integer of 1 or 2, and l and k each represent an integer from 1 to 4.

4,448,870

MAGNETIC COLOR TONER

Eiichi Imai, Narashino; Hitoshi Uchide, Yokohama; Kazunori Murakawa, Tokyo; Masaki Uchiyama, Tokyo; Hisayuki Ochi, Tokyo; Motoo Urawa, Funabashi; Seiichi Takagi, Tokyo, and Yasuo Mitsuhashi, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 11, 1983, Ser. No. 483,740
Claims priority, application Japan, Apr. 15, 1982, 57-62855
Int. Cl.³ C01G *49/06*; G03C *5/46*
U.S. Cl. 430—107 **7 Claims**



1. A magnetic color toner containing a magnetic material and a binder, said magnetic material comprising magnetic particles comprising a mixture of α-Fe_2O_3 and γ-Fe_2O_3

4,448,871

TONER FOR DEVELOPING AN ELECTROSTATICALLY CHARGED IMAGE AND MANUFACTURING METHOD THEREOF

Kiyoshi Tamaki; Hideki Murata; Sadatugu Terada; Tsuneo Wada, all of Hino; Akitoshi Matsubara, and Hiroyuki Takagiwa, both of Hachioji, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Aug. 24, 1981, Ser. No. 295,657
Claims priority, application Japan, Aug. 27, 1980, 55-118825
Int. Cl.³ G03G *9/08*
U.S. Cl. 430—109 **2 Claims**

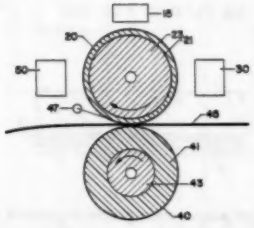
1. A toner for developing an electrostatically charged image comprising polymerized grains formed by the suspension polymerization of an alpha-beta unsaturated polymeric monomer or monomers in the presence of a dispersion stabilizer selected from the group consisting of aluminum hydroxide, ferric hydroxide, titanium hydroxide and thorium hydroxide.

4,448,872

DUPLEX IMAGING WITH PRESSURE TRANSFIXING

Casey S. Vandervalk, Mendon, Mass., assignor to Delphax Systems, Mississauga, Canada

Continuation-in-part of Ser. No. 14,196, Feb. 22, 1979, abandoned. This application Sep. 29, 1982, Ser. No. 426,335
Int. Cl.³ G03G *13/14*
U.S. Cl. 430—126 **18 Claims**



1. A method of duplex imaging which comprises forming a first toner image on the surface of an image roller, said image

surface having a smoothness in excess of 20 microinch rms and a modulus of elasticity in compression of at least 10^7 PSI;

transferring said first toner image to the surface of a transfer roller in rolling contact with said image roller under a compressive load, said transfer roller having a surface layer of a material selected from the group consisting of engineering thermoplastic and engineering thermoset materials;

creating a second toner image on the surface of the image roller;

passing an image receptor sheet between said image roller and said transfer roller; and

transferring said first toner image from said transfer roller to one side of said image transfer sheet and simultaneously transferring said second toner image from said image roller to an opposite side of said image receptor sheet,

wherein the rollers are pressed together sufficiently to fuse the toner images to said image receptor sheet at ambient temperatures.

4,448,873

NEGATIVE WORKING DIAZO CONTACT FILM

John E. Walls, Annandale, and Major S. Dhillon, Hillsborough, both of N.J., assignors to American Hoechst Corporation, Somerville, N.J.

Filed Mar. 18, 1982, Ser. No. 359,460
Int. Cl.³ G03C *1/60, 1/78*
U.S. Cl. 430—157 **10 Claims**

1. A photographic element capable of functioning as a photomask upon imagewise exposure to a suitable light source and upon development by a suitable developer, comprising a transparent support and a coating on at least a portion of said support, said coating comprising a light sensitive negative working diazonium composition having a light absorbency of about 45% or less when exposed to a suitable energy source in the range from about 350 to about 390 nanometers as determined by the herein specified Test Procedure, and a colorant composition comprising a mixture of dyes, said coating having a light transmission of not more than about 0.1% in the 350 to 390 nanometer range, and is capable of being rendered substantially insoluble upon exposure to ultraviolet radiation at an energy level of from about 15 to about 25 mJ/cm^2 and wherein the non-image areas are substantially removable upon treatment with a suitable developer.

4,448,874

POLYMERIC TIMING LAYER FOR COLOR TRANSFER ASSEMBLAGES

Edward P. Abel, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 31, 1983, Ser. No. 480,963
Int. Cl.³ G03C *1/40, 1/48, 5/54, 5/24*
U.S. Cl. 430—215 **23 Claims**

1. In a photographic assemblage comprising:

(a) a photosensitive element comprising a support having thereon at least one photosensitive silver halide emulsion layer having associated therewith a dye image-providing material;

(b) a dye image-receiving layer;

(c) a neutralizing layer for neutralizing an alkaline processing composition; and

(d) a timing layer located between said neutralizing layer and said dye image-receiving layer;

the improvement wherein said timing layer comprises a physical mixture of the following two polymers:

(i) a first polymer comprising from about 5 to about 35 percent by weight of recurring units of an ethylenically unsaturated monomer, from about 0 to about 20 percent by weight of recurring units of an ethylenically unsaturated carboxylic acid, and from about 55 to about 85 percent by weight of recurring units of vinylidene chloride; and

(ii) a second polymer comprising from about 20 to about 70 percent by weight of recurring units of maleic anhydride and from about 80 to about 30 percent by weight of recurring units of a vinyl ester or an alkene;

said second polymer being present at a concentration of from about 2 to about 20 percent by weight of said mixture.

4,448,875

ELECTRON BEAM SENSITIVE MIXTURE RESIST

David F. Lewis, Monroe, Conn., assignor to GAF Corporation, New York, N.Y.

Filed Mar. 31, 1983, Ser. No. 480,636
Int. Cl.³ G03C *5/16*
U.S. Cl. 430—283 **26 Claims**

1. A high sensitivity electron beam resist material which is the mixture of the reaction product consisting essentially of a mixture of an alkyl vinyl ether-maleic anhydride copolymer with a terminally unsaturated alcohol and the reaction product consisting essentially of a compound selected from the group consisting of N-hydroxyalkyl amides and N-aminoalkyl amides mixed with alkylvinyl ether-maleic anhydride copolymer.

4,448,876

ELECTRON BEAM SENSITIVE RESIST

Donald H. Lorenz, Basking Ridge, N.J., and Earl P. Williams, Pen Argyl, Pa., assignors to GAF Corporation, New York, N.Y.

Division of Ser. No. 381,287, May 24, 1982, Pat. No. 4,375,398, which is a continuation-in-part of Ser. No. 357,381, Mar. 12, 1982, abandoned, which is a continuation of Ser. No. 249,991, Apr. 15, 1980, abandoned. This application Dec. 6, 1982, Ser. No. 447,381
Int. Cl.³ G03C *5/00*
U.S. Cl. 430—296 **4 Claims**

1. In a method of recording information whereby a beam of electrons is scanned across a surface of an electron beam sensitive material comprising a polymer which is the mixed half-ester reaction product of a reaction between the maleic anhydride of a copolymer of maleic anhydride and a vinyl monomer with a mixture of a terminally unsaturated alcohol compound and an N-hydroxyalkyl amide.

2. In a method of recording information whereby a beam of electrons is scanned across a surface of an electron beam sensitive material comprising a polymer which is the mixed half-ester reaction product of a reaction between the maleic anhydride of a copolymer of maleic anhydride and a vinyl monomer with a mixture of terminally unsaturated alcohol compound and an N-aminoalkyl amide.

4,448,877

TELLURIUM IMAGING COMPOSITION INCLUDING WATER

Terry T. Yu, Macomb County, Mich., assignor to Energy Conversion Devices, Inc., Troy, Mich.

Filed Jun. 28, 1982, Ser. No. 392,576
Int. Cl.³ G03C *5/24, 1/00*
U.S. Cl. 430—346 **18 Claims**

1. A film for forming an image made from a film-forming composition, which composition comprises:

(a) an image forming tellurium compound selected from the group consisting of

R_x—Te—Hal_y;

$(Hal—R^2)_x$—Te—Hal_y;

$TeCl_nBr_m$; and

R_2—Te—Hal_4

where, in the foregoing formulae, R is an organic radical containing at least 1 carbonyl group, R^2 is the residue of an

ethylenic hydrocarbon, Hal is halogen, x is 1, 2 or 3 and x+y=4, n is an integer from 1 to 4 and m+n=4;

(b) a reductant precursor which will abstract labile hydrogen from a labile hydrogen source under the influence of imaging energy to become a reducing agent with respect to the imaging forming tellurium compound;

(c) a source of labile hydrogen for reaction with said reductant precursor;

(d) water, present in an amount such that an increase in the film speed is attained relative to film made of the same composition having no water; and

(e) a matrix in which said tellurium compound, reductant precursor, source of labile hydrogen and water are combined in amounts effective to form a composition which may be applied to a substrate.

4,448,878

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIALS

Kiyohiko Yamamuro; Shigeo Hirano, and Yasuo Iwasa, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 12, 1982, Ser. No. 441,208

Claims priority, application Japan, Nov. 13, 1981, 56-181994; Dec. 2, 1981, 56-193832

Int. Cl.³ G03C *1/34*

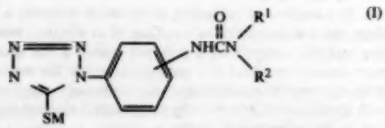
U.S. Cl. 430—507 **12 Claims**

1. A silver halide photographic light-sensitive material, comprising:

a support base;

a silver halide emulsion layer positioned on the support base; and

a compound represented by the general formula (I):



(I)

wherein M is hydrogen, an alkali metal atom, or a quaternary ammonium group, and R^1 and R^2 are each hydrogen, a substituted or unsubstituted aliphatic group, or a substituted or unsubstituted aromatic group, and may be the same or different and may combine together to form a ring.

4,448,879

HIGH YIELD PROCESS FOR IN VITRO PRODUCTION OF SERUM-FREE AND MITOGEN-FREE INTERLEUKIN-2

Hans-Ake Fabricius, Breisach, and Roland Stahn, Holzhausen, both of Fed. Rep. of Germany, assignors to Hooper Trading Company, Curacao, Netherlands Antilles

Continuation-in-part of Ser. No. 247,769, Mar. 26, 1981, Pat. No. 4,390,623, which is a continuation-in-part of Ser. No. 193,112, Oct. 2, 1980, abandoned. This application Sep. 15, 1982, Ser. No. 418,378

Int. Cl.³ A01N *1/02*; C12P *21/00*

U.S. Cl. 435—2 **3 Claims**

1. In a process for producing a serum-free and mitogen-free interleukin-2 containing supernatant by the steps of stimulating IL-2 producing cells by incubating the cells in a liquid tissue culture medium supplemented with serum protein and mitogen; separating and washing the stimulated cells to remove substantially all of the serum protein and mitogen; and, conditioning the washed cells by incubating the cells in the presence of fresh liquid tissue culture medium in the absence of serum protein and mitogen to thereby transfer the interleukin-2 into the liquid phase; the improvement comprising,

carrying out the incubation steps under an oxygen rich atmosphere comprising at least 70% oxygen and at least 5% carbon dioxide.

4,448,880

DETECTION OF β-LACTAMASE UTILIZING A CHROMOPHORIC CEPHALOSPORIN COMPOSITION

Peter Schindler, Rodgau, and Gerhard Huber, Kelkheim, both of Fed. Rep. of Germany, assignors to Hoechst AG., Frankfurt am Main, Fed. Rep. of Germany

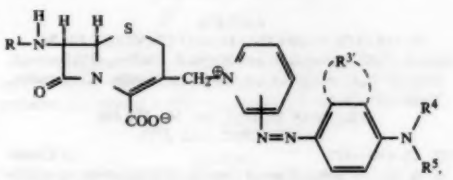
Division of Ser. No. 142,767, Apr. 22, 1980, Pat. No. 4,353,824. This application Jul. 6, 1982, Ser. No. 395,135

Claims priority, application Fed. Rep. of Germany, Apr. 24, 1979, 2916433

Int. Cl.³ C12Q *1/34, 1/00, 1/04*

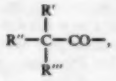
U.S. Cl. 435—18 **5 Claims**

1. A composition for the detection of β-lactamase comprising, in solution or on a carrier, a chromophoric cephalosporin of the formula



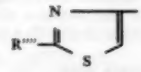
wherein

R^1 is hydrogen, formyl, or



wherein in turn

R′ is hydrogen; alkyl having 1 to 4 carbon atoms; such alkyl substituted by chlorine, by bromine, by cyano, by hydroxy, or by alkoxy having 1 to 4 carbon atoms; or is ω-carboxyalkyl; ω-carboxy-ω-aminoalkyl; ω-carboxy-ω-benzoylaminoalkyl; cycloalkyl or cyclalkenyl having 5 to 7 carbon atoms; phenyl; phenyloxy; or phenyl or phenyloxy mono- or di-substituted by alkyl having 1 to 4 carbon atoms, by hydroxy, by alkoxy having 1 to 4 carbon atoms, by alkanoyloxy having 1 to 4 carbon atoms, by fluorine, by chlorine, by carboxy, by sulfoxy, by amino, or by alkanoylamino having 1 to 4 carbon atoms; or R′ is 2-pyridon-1-yl; 4-pyridon-1-yl; 3,5-dichloro-pyridon-1-yl; 2-thienyl; 3-thienyl; 2-furyl; 3-furyl; tetrazolyl; or is thiazolyl of the formula



wherein R″″ is alkyl having 1 to 4 carbon atoms, formamido, acetamido, chloroacetamido, bromoacetamido, or trifluoroacetamido; or R′ is 2-methyl-1,3,4-thiadiazol-5-yl-thio; or is 2-amino-1,3,4-thiadiazol-5-yl-thio;

R″ and R‴, taken together, are oxygen, or, taken alone, are the same or different and are hydrogen; alkyl having 1 to 4 carbon atoms; hydroxy; alkanoyloxy having 1 to 4 carbon atoms; alkoxy having 1 to 4 carbon atoms; amino; alkylamino; alkylamino mono- or di-substituted by p-methoxyphenyl or mono-, di-, or tri-substituted by phenyl; alkoxycarbonyl having 1 to 4 carbon atoms in the alkyl group; chlorine; bromine; cyano; sulfoxy; aminosulfonyl; or are acylamino selected from the group consisting of

formylamino, acetylamino, chloroacetylamino, bromoacetylamino, benzoylamino, tert.butoxycarbonylamino, 2,2,2-trichloroethoxycarbonylamino, 4-hydroxy-1,5-naphthyridin-2-carbonylamino,3-hydroxypyridazin-4-carbonylamino, imidazolidin-2-on-1-yl-carbonylamino, (3-methyl-sulfonyl-imidazolidin-2-on-1-yl) carbonylamino, and (4-ethyl-piperazin-2,3-dion-1-yl) carbonylamino;

R^4 and R^5 are the same or different and are hydrogen; alkyl having 1 to 4 carbon atoms; or alkyl having 1 to 4 carbon atoms substituted by cyano, by carboxy, by alkoxy having 1 to 4 carbon atoms, by hydroxy, by alkanoyloxy having 1 to 4 carbon atoms, by aminocarbonyl, by sulfoxy, or by chloro; and

$R^{3'}$ is two hydrogen atoms or is benzo, pyrido, thieno, pyrimidino, or thiazolo.

4,448,881

FERMENTABLE SUGAR FROM THE HYDROLYSIS OF STARCH DERIVED FROM DRY MILLED CEREAL GRAINS

Werner C. Muller, Dobbs Ferry, N.Y., and Franklyn D. Miller, Cincinnati, Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 219,011, Dec. 22, 1980, abandoned, which is a continuation-in-part of Ser. No. 112,033, Jan. 14, 1980, Pat. No. 4,287,304. This application Jun. 23, 1982, Ser. No. 391,324

The portion of the term of this patent subsequent to Sep. 1, 1998, has been disclaimed.

Int. Cl.³ C12P *7/14, 7/06*

U.S. Cl. 435—162 **17 Claims**

1. A process for converting the starch fraction derived from whole dry milled cereal grain to a sterile aqueous solution of fermentable sugar, said starch containing water insoluble protein and oil and one or more water soluble components selected from the group consisting of sugar, lipid, protein, vitamin and mineral, which comprises:

a. liquefying an aqueous slurry of the starch by hydrolysis to provide sterile aqueous partial starch hydrolysate slurry containing the water insoluble protein and oil and the water soluble components in substantially unaltered condition;

b. separating the slurry resulting from liquefying step (a) into an aqueous sterile slurry of partial starch hydrolysate containing a part of the water soluble components and an aqueous slurry of water insoluble protein and oil containing the remaining part of the water soluble components; and

c. intensively saccharifying the relatively thin aqueous slurry of partial starch hydrolysate to provide a sterile aqueous solution of fermentable sugar.

4,448,882

STABILIZED PEROXIDASE COMPOSITIONS

Hans Brodbeck, Münchenstein, and Harald Gallati, Dornach, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Jul. 12, 1982, Ser. No. 397,613

Claims priority, application Switzerland, Jul. 30, 1981, 4944/81

Int. Cl.³ C12N *9/96, 9/08;* **C12Q** *1/28*

U.S. Cl. 435—188 **12 Claims**

7. A stabilized comosition of peroxidase which is bound to an immunologically active material comprising said bound peroxidase and a stabilizing effective amount of 4-amino-antipyrine.

4,448,883

METHOD OF MAKING LYOPHILIZED TERMINAL DEOXYNUCLEOTIDYL TRANSFERASE

Richard V. Case, Midland, Tex., assignor to The Midland Certified Reagent Company, Midland, Tex.

Filed Jul. 26, 1982, Ser. No. 401,812

Int. Cl.³ C12N *9/12, 9/96*

U.S. Cl. 435—194 **7 Claims**

1. A method of stabilizing the bio-catalytic activity of heat-sensitive terminal deoxynucleotidyl transferase (TDT) comprising lyophilizing a solution of the enzyme, said solution prior to lyophilization having a pH in the range of 6.0 to 10.0, an ionic concentration of at least 0.05 mole/liter and a protein concentration of 0.3 gram/liter or greater, comprising the steps of:

(a) maintaining the pH of the solution at 6.0–10.0;

(b) maintaining the ionic concentration of the solution at a concentration of the solution at a concentration of 0.05 mole/liter or above;

(c) maintaining the protein concentration above 0.3 gram/-liter; and

(d) lyophilizing said solution, whereby a lyophilized terminal deoxynucleotidyl transferase having substantial biocatalytic activity is obtained.

4,448,884

GLASS-SURFACE MICROCARRIER FOR GROWTH OF CELL CULTURES

Timothy M. Henderson, Ann Arbor, Mich., assignor to KMS Fusion, Inc., Ann Arbor, Mich.

Filed Mar. 3, 1982, Ser. No. 354,345

Int. Cl.³ C12N *5/00, 5/02, 11/14*

U.S. Cl. 435—241 **7 Claims**

1. A microcarrier adapted for use as growth sites for anchorage dependent cells in an aqueous cell culture medium comprising a spherical substrate of polymeric material having a density of about 1 g/cc and a thin continuous discrete surface layer of silicate glass composition entirely surrounding said substrate.

4,448,885

BACILLUS THURINGIENSIS CRYSTAL PROTEIN IN *ESCHERICHIA COLI*

H. Ernest Schnepf, and Helen R. Whiteley, both of Seattle, Wash., assignors to Board of the Regents of the University of Washington, Seattle, Wash.

Filed Apr. 27, 1981, Ser. No. 257,963

Int. Cl.³ C12N *1/20, 15/00, 1/00;* **C12P** *21/00*

U.S. Cl. 435—253 **6 Claims**

2. A hybrid recombinant plasmid capable of replication in an *Escherichia coli* bacterial host species, said plasmid containing expressible heterologous DNA coding for a polypeptide of 130,000 Mr which has the immunological properties of crystal protein of *Bacillus thuringiensis,* said plasmid further including an expression mechanism for said heterologous DNA which is recognized by the host species' system.

4,448,886

BIODISPERSIONS

Lawrence J. Gestaut, Concord, Ohio, and P. David Simcox, Langhorne, Pa., assignors to Diamond Shamrock Corporation, Dallas, Tex.

Filed Nov. 30, 1981, Ser. No. 325,652

Int. Cl.³ C12P *3/00;* **C22B** *11/00, 3/00;* **C25B** *11/08*

U.S. Cl. 435—262 **11 Claims**

1. A process for producing high dispersion metal crystallites dispersed substantially homogeneously in a carbonaceous material matrix comprising:

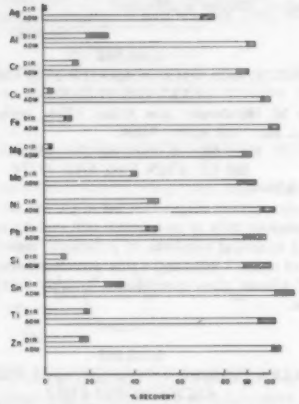
a. introducing living microbes into a growth medium consisting essentially of a microbe nutrient, an aqueous liquid, and at least one metal in solvated form;

b. growing said microbes in said growth medium, allowing said microbes to incorporate said metal;
c. harvesting said microbes containing said metal; and
d. pyrolyzing said harvested, metal-containing microbes in an inert or reducing atmosphere at a temperature of at least about 300° C. thereby yielding said high dispersion metal crystallites dispersed substantially homogeneously in a carbonaceous material matrix coformed therewith during this pyrolysis step.

4,448,887

METHOD FOR THE PARTICLE SIZE INDEPENDENT SPECTROMETRIC DETERMINATION OF METAL PARTICLES IN LUBRICATING OILS AND HYDRAULIC FLUIDS

Robert E. Kauffman, Kettering; Wendell E. Rhine, Dayton, and Costandy S. Saba, Springfield, all of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sep. 30, 1982, Ser. No. 429,939
Int. Cl.³ G01N *21/71, 33/20, 33/28*
U.S. Cl. 436—60 **20 Claims**

1. A method for determining the degree of wear metal contamination of an oil which comprises the steps of:
(a) combining a sample of said oil with an acid mixture consisting of about 8 to 12 weight percent of concentrated HF, about 76 to 84 weight percent of concentrated HCl and about 8 to 12 weight percent of concentrated nitric acid;
(b) heating the resulting oil/acid mixture to dissolve wear metal particles;
(c) diluting said oil/acid mixture with a solvent mixture consisting of about 20 to 40 parts by weight of a nonionic surfactant and about 60 to 80 parts of a diluent; and
(d) spectrometrically analyzing the resulting diluted mixture.

4,448,888

COMPOSITIONS AND METHOD FOR CORRECTING TEMPERATURE DEPENDENCE OF HEMOGLOBIN ASSAYS

Dennis M. Bleile, Emeryville; Diane M. Allen, Richmond; Steve K. Tanaka, Vallejo, and Francis J. Matarrese, Jr., Oakland, all of Calif., assignors to Bio-Rad Laboratories, Inc., Richmond, Calif.

Filed Aug. 24, 1982, Ser. No. 411,112
Int. Cl.³ G01N *33/72, 33/66*
U.S. Cl. 436—67 **20 Claims**

1. A set of storage-stable hemoglobin compositions for use in the temperature correction of a hemoglobin A_1 or A_{1c} assay of a sample performed on a cation exchange chromatographic column, said set comprising a plurality of compositions of hemoglobin A_o and hemoglobin A_1 containing hemoglobin A_{1c}, said compositions containing known ratios of hemoglobin A_1 to total hemoglobin at graduated levels extending over the expected range of said sample, with the hemoglobin A_{1c} content of the hemoglobin A_1 in each composition adjusted approximately according to the following formula:

$$y = mx + b$$

where y = weight percent A_{1c} with respect to A_1,
x = weight percent A_1 with respect to total hemoglobin
m = −1.7 and b = 85 when $x < 10$, and
m = −1.2 and b = 80 when $x > 10$,

and said compositions further containing effective amounts of at least one antibiotic agent.

11. In a method for determining the level of hemoglobin A_1 in a sample of human blood, which comprises:
(a) lysing the red blood cells in said sample to form a hemolysate,
(b) impregnating a weak cation exchange resin with said hemolysate,
(c) passing through said resin a buffer solution with ions of an alkali metal dissolved therein at a concentration of from about 0.06 M to about 0.11 M to preferentially elute said hemoglobin A_1 over other hemoglobins present in said hemolysate, and
(d) analyzing the eluate from step (c) for its hemoglobin content, the improvement comprising performing the following steps under substantially identical ambient conditions as those under which steps (b) through (d) above were performed:
(e) impregnating each of a plurality of further cation exchange resins substantially identical to that of step (b) with an aqueous calibrator solution selected from a series of such solutions such that the calibrators used contain known graduated ratios of hemoglobin A_1 to total hemoglobin extending over the expected range of said sample, and the composition of said calibrators conforming approximately to the following formula:

$$y = mx + b$$

where y = weight percent A_{1c} with respect to A_1
x = weight percent A_1 with respect to total hemoglobin
m = 1.7 and b = 85 when $x < 10$, and
m = 1.2 and b = 80 when $x > 10$,

(f) passing through each of the resins of step (e) a buffer solution identical to that of step (c),
(g) analyzing each of the eluates from step (f) for its hemoglobin content, and
(h) comparing the analysis of step (d) with those of step (g).

4,448,889

FLUID ANALYSIS

Bruce P. Neri, North Andover; Stanley M. Liffmann, Methuen, both of Mass., and Carolyn Bergkuist, Hampstead, N.H., assignors to Instrumentation Laboratory Inc., Lexington, Mass.

Filed Jun. 18, 1982, Ser. No. 389,895
Int. Cl.³ G01N *33/20, 33/52*
U.S. Cl. 436—74 **19 Claims**

1. A method for determination of calcium in a fluid sample comprising the steps of
providing a first reagent that contains a dye which interacts with calcium ions and, when mixed with said sample at a first pH value, provides a first colorimetrically detectable value that is not a function of an interaction between

calcium ions in said sample and said dye, and when mixed with said sample at a second pH value provides a second colorimetrically detectable value, said second colorimetrically detectable value being different from said first colorimetrically detectable value and being a function of an interaction between calcium ions in said sample and said dye,

mixing said sample with said first reagent such that the resulting mixture has said first pH value,

performing a first colorimetric measurement on said mixture of said first reagent and said sample,

adding a second reagent to said mixture of said first reagent and said sample to shift the pH of the resulting mixture from said first pH value to said second pH value,

performing a second colorimetric measurement on the resulting mixture, and

determining the difference between said first and second colorimetric measurements, said difference being a measure of calcium in said sample.

4,448,890
DETECTION OF HUMAN CANCER CELLS WITH ANTIBODIES TO HUMAN CANCER NUCLEOLAR ANTIGENS

Karel Smetana, Prague, Czechoslovakia; Harris Busch, Rose K. Busch, Ferenc Gyorkey, Phyllis Gyorkey, and Frances M. Davis, all of Houston, Tex., assignors to Baylor College of Medicine, Houston, Tex.

Filed Sep. 29, 1980, Ser. No. 191,612
Int. Cl.³ G01N *33/54, 33/58;* C07G *7/00*
U.S. Cl. 436—508 **14 Claims**

1. Antigens selected from the group consisting of isolated nucleoli and nuclear extracts which contain nucleoli constituents, the antigens being in substantially purified form and having major and minor species, the major species having the following characteristics,

a pI on isoelectric focusing of about 6.0 to 6.7, and

a molecular weight of about 50,000 to about 60,000 daltons,

is soluble in 0.01 M Tris HCl pH 8, and

is primarily localized in nucleoli of human cancer cells.

4,448,891
ZEOLITE L CATALYST FOR REFORMING

Abraham D. Cohen, Sarnia, Canada, assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Sep. 28, 1982, Ser. No. 426,211
Int. Cl.³ B01J *29/32, 29/12*
U.S. Cl. 502—74 **21 Claims**

1. A catalyst for hydrocarbon reforming comprising a zeolite having exchangeable cations of which at least 90% are metal ions selected from the group consisting of sodium, barium, lithium, potassium, rubidium and cesium and containing at least one metal selected from the group consisting of Group VIII of the periodic table of elements and having a dehydrocyclizing effect, said zeolite produced by soaking a type L zeolite prior to calcining the dehydrocyclizing metal loaded zeolite in an alkali solution having a pH of at least 11 for a time and at a temperature effective to increase the period of time over which the catalytic activity of the catalyst is maintained under reforming conditions.

18. A zeolite suited for use as a catalyst support comprising:

a zeolite produced by soaking a type L zeolite in an alkali solution having a pH of at least 11 for a temperature and a period of time effective to increase the period of time over which the catalytic activity is maintained when said zeolite is loaded with a catalytically active metal, said soaking carried out prior to calcining the zeolite when it is loaded with a dehydrocyclizing metal.

21. Zeolite of claim 18 wherein said soaking is carried out prior to loading the zeolite with a dehydrocyclizing metal.

4,448,892
OLEFIN OXIDATION CATALYST

Semyon G. Kukes, and Tod K. Shioyama, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 1, 1982, Ser. No. 364,360
Int. Cl.³ B01J *31/30, 31/28, 31/18;* C07C *45/04*
U.S. Cl. 502—164 **12 Claims**

1. A composition useful for the Wacker catalytic oxidation of olefins to carbonyl compounds comprising:

(a) one or more suitable palladium components;

(b) one or more suitable heteropolyacid or copper components;

(c) one or more surfactants selected from the group consisting of quaternary ammonium salts, alkali metal sulfates, alkali metal salts of alkanoic acids, alkali metal salts of alkaryl sulfonic acids, and 1-alkyl pyridinium salts; and

(d) at least one fluorocarbon compound conforming to the empirical formula:

$$C_{x'}F_{y'}X_{z'}$$

wherein X is a halogen other than fluorine and y' is greater than x' and y' is greater than z'.

2. The composition of claim 1 wherein (d) is at least one perfluorinated compound containing from 1 to about 24 carbon atoms.

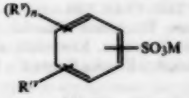
12. The composition of claim 1 wherein the surfactant is at least one compound selected from Groups (A) through (E), as follows:

(A) Quaternary ammonium salts of the general formula $(R'''')_4N^+X^-$ wherein R'''' is an alkyl radical of from 1 to 20 carbon atoms and wherein the total number of carbon atoms in said quaternary ammonium salt is from 8 to 30 carbon atoms; and wherein X is selected from the group consisting of Br^-, Cl^-, I^-, F^-, $R''''CO_2^-$, QSO_3^-, BF_4^-, and HSO_4^-, wherein Q is an aryl, alkaryl or arylalkyl radical of 6 to 10 carbon atoms;

(B) Alkali metal alkyl sulfates of the general formula $R'^{v}OSO_3M$, wherein R'^{v} is an alkyl radical having from 10 to 20 carbon atoms and wherein M is an alkali metal;

(C) Alkali metal salts of alkanoic acids of the general formula $R'^{v}CO_2M$, wherein R'^{v} and M have the same meaning as given above for the compounds of (B);

(D) Alkali metal salts of alkaryl sulfonic acids of the general formula



wherein R'^{v} and M have the same meaning as given and wherein R' is an alkyl radical of 1 to 4 carbon atoms and wherein n is 0 or an integer of from 1 to 4; and

(E) 1-Alkyl pyridinium salts of the general formula

wherein R'^{v} and X^- have the same meanings as described above.

4,448,893

PREPARATION OF IMPROVED MIXED VANADIUM PHOSPHORUS OXIDE CATALYST AND THEIR USE IN OXIDATION PROCESSES

Noel J. Bremer, Kent; Dennis E. Dria, Cleveland Heights, and Andrew M. Weber, Bedford Heights, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Division of Ser. No. 286,434, Jul. 24, 1981, Pat. No. 4,365,069. This application Aug. 26, 1982, Ser. No. 411,780

Int. Cl.³ B01J *27/14*

U.S. Cl. 502—209 12 Claims

1. A process for the preparation of vanadium phosphorus mixed oxide containing catalysts comprising

(a) introducing a pentavalent vanadium compound into an organic liquid reaction medium selected from alcohols and glycols capable of reducing at least a portion of the vanadium to a valence state of about +4 in the absence of corrosive reducing agents;

(b) introducing at least one pentavalent phosphorus compound into the reaction medium;

(c) effecting reduction of the vanadium prior or subsequent to the addition of the phosphorus compound and reacting the vanadium with the phosphorus compound to form a catalyst precursor;

(d) removing from the reaction medium during the reduction or reaction at least 1.5 moles of the organic liquid including organic oxidation byproducts per mole of vanadium reduced or reacted;

(e) recovering the catalyst precursor from the reaction medium;

(f) drying the catalyst precursor; and

(g) calcining the catalyst precursor.

4,448,894

CATALYST AND REVERSE DISPROPORTIONATION PROCESS

Charles F. Hobbs, Des Peres, Mo., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 403,254, Jul. 29, 1982, Pat. No. 4,419,526. This application Jul. 18, 1983, Ser. No. 514,724

Int. Cl.³ B01J *23/31*

U.S. Cl. 502—249 7 Claims

1. A catalyst comprising catalytically-effective amounts of antimony, tungsten and an alkali or alkaline earth component on a carrier material.

4,448,895

PROCESS FOR PREPARATION OF CATALYST FOR CLEANING EXHAUST GASES AND CATALYST PREPARED BY THE PROCESS

Tetsuji Ono, Amagasaki; Kazuo Tsuchitani, Ibaraki; Shin Yamauchi, Ikeda, and Kiyoshi Yonehara, Kawanishi, all of Japan, assignors to Nippon Shokubai Kagaku Kogyo Co. Ltd., Osaka, Japan

Filed Nov. 4, 1982, Ser. No. 439,191

Claims priority, application Japan, Nov. 11, 1981, 56-179819

Int. Cl.³ B01J *21/04, 23/10, 23/89*

U.S. Cl. 502—304 11 Claims

1. A process for preparing a catalyst for cleaning exhaust gases comprising a refractory carrier composed mainly of alumina and having deposited thereon, iron oxide, cerium oxide and at least one platinum group noble metal element, which comprises impregnating said carrier with

(a) an aqueous solution A prepared by adding aqueous ammonia to an aqueous solution containing a water-soluble iron salt as a material for iron and a cerium salt of an organic acid as a material for cerium to adjust the pH of the aqueous solution to 6.0–9.0, and optionally adding an ammonium salt of an organic acid, and

(b) an aqueous solution B containing a compound of the platinum group noble metal element; drying and calcining said impregnated carrier, the catalyst containing 0.5 to 20 g of iron and 0.5 to 20 g of cerium per liter of the catalyst.

4,448,896

HYDROGENATION CATALYST FOR DESULFURIZATION AND REMOVAL OF HEAVY METALS

Yoichi Kageyama, Isehara; Kazuhiko Onuma, Machida; Toshihiro Kawakami, Yokkaichi, and Makoto Suzuki, Yokohama, all of Japan, assignors to Mitsubishi Chemical Ind., Ltd. and Asia Oil Company Limited, both of Tokyo, Japan

Filed Jun. 3, 1982, Ser. No. 384,626

Claims priority, application Japan, Jun. 2, 1981, 56-84703; Jun. 4, 1981, 56-86116

Int. Cl.³ B01J *21/04, 23/24, 23/74*

U.S. Cl. 502—314 17 Claims

1. A hydrogenation catalyst for desulfurization and removal of heavy metals, which comprises: (a) at least one metal component selected from the group consisting of metals of Groups VI B and VIII of the Periodic Table, as a catalytically active component, and (2) a porous activated alumina carrier obtained by shaping a mixture of carbon black and a powder of activated alumina or a precursor of activated alumina, drying the shaped mixture and firing said dried mixture in an oxygen-containing gas stream to burn off the carbon black.

4,448,897

METHOD FOR PRODUCING A VANADIUM-TITANIUM CATALYST EXHIBITING IMPROVED INTRINSIC SURFACE AREA

Robert G. Gastinger, Brookhaven, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed May 13, 1982, Ser. No. 377,775

Int. Cl.³ B01J *21/06, 23/22*

U.S. Cl. 502—350 7 Claims

1. A method for producing a mixed vanadium-titanium oxides catalyst which method comprises forming a precipitate by the mixing of at least one vanadyl alkoxide, at least one titanium alkoxide in an aqueous solution, recovering, drying and calcining the resulting precipitate.

4,448,898

METHOD FOR PRODUCING A VANADIUM-TITANIUM-TIN CATALYST EXHIBITING IMPROVED INTRINSIC SURFACE AREA

Hsiang-Ning Sun, Media, Pa., assignor to Altantic Richfield Company, Los Angeles, Calif.

Filed Jun. 7, 1982, Ser. No. 386,168

Int. Cl.³ B01J *21/06, 23/14, 23/22*

U.S. Cl. 502—350 10 Claims

1. A method for producing a mixed vanadium-titanium-tin oxides catalyst which method comprises forming a precipitate by the mixing of at least one vanadyl alkoxide, at least one titanium alkoxide, and at least one tin compound in an aqueous solution, recovering, drying and calcining the resulting precipitate.

4,448,899

PROCESS FOR REMOVING SO_x AND NO_x COMPOUNDS FROM GAS STREAMS

Robert H. Hass, Fullerton, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

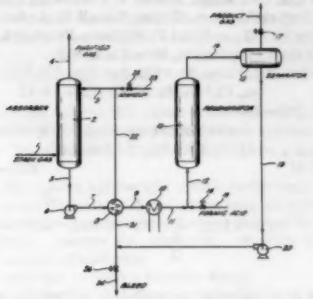
Division of Ser. No. 151,783, May 21, 1980, Pat. No. 4,372,932, Continuation-in-part of Ser. No. 907,189, May 18, 1978, Pat. No. 4,222,991. This application Sep. 24, 1982, Ser. No. 423,008

Int. Cl.³ B01D *53/54*

U.S. Cl. 521—32 25 Claims

1. A catalyst composition comprising a water-insoluble, anionic, organic ion exchange resin containing tertiary amine

functional groups, said resin having anionic ion exchange capacity, essentially all of which exchange capacity resides in



said tertiary amine functional groups, and containing formate ion in at least 50% of the anionic ion exchange sites.

4,448,900

EXPANDABLE POLYSTYRENE COMPOSITION AND PROCESS

Richard A. Schwarz, Big Spring, Tex., assignor to Cosden Technology, Inc., Dallas, Tex.

Filed Apr. 29, 1983, Ser. No. 489,973

Int. Cl.³ C08J *9/22*

U.S. Cl. 521—57 **3 Claims**

1. A process for reducing the adhesion of expandable polystyrene beads to one another, comprising coating the beads with an anti-adhesion composition comprising effective amounts of magnesium stearate and zinc stearate respectively, wherein, (a) the effective amount of magnesium stearate is from about 50 grams to about 400 grams per 1000 pounds of expandable polystyrene beads; and (b) the effective amount of zinc stearate is from about 50 grams to about 500 grams per 1000 pounds of expandable polystyrene beads.

4,448,901

EXPANDED PARTICLES OF POLYOLEFIN RESIN AND PROCESS FOR PRODUCING SAME

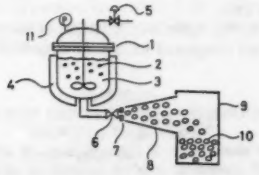
Kenichi Senda, Hirakata; Masao Ando, Toyonaka; Kyoichi Nakamura, Settsu; Kiyoshi Mori, Kakogawa, and Tatehiko Nishida, Ibaraki, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed May 13, 1983, Ser. No. 494,394

Claims priority, application Japan, May 13, 1982, 57-81137; May 13, 1982, 57-81138; May 13, 1982, 57-82097; May 14, 1982, 57-82096; Aug. 13, 1982, 57-141573

Int. Cl.³ C08J *9/18*

U.S. Cl. 521—60 **7 Claims**



1. A process for producing expanded particles of a polyolefin resin characterized by dispersing polyolefin resin particles 0.25 to 10 mm in particle size and a volatile blowing agent in water in the presence of a dispersant within a pressure-resistant container, heating the mixture at a temperature within the range of from the melting point of crystals of the resin minus 25° C. to the melting point plus 10° C. to impregnate the resin particles with the blowing agent, and releasing the mixture of the particles and water into a low-pressure zone through at least one orifice having an area of 0.07 to 300 mm^2 while maintaining the interior of the container at a constant temperature and constant pressure.

4,448,902

METHOD AND A DEVICE FOR THE PRODUCTION OF A REACTION MIXTURE FROM FLOWABLE FOAM-FORMING OR SOLID-FORMING COMPONENTS

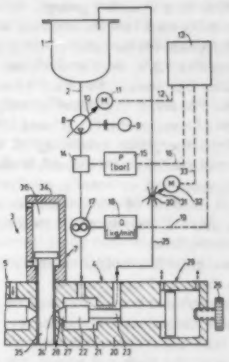
Rolf Coblenz, Cologne; Klaus Schulte, Leverkusen; Wilfried Ebeling, Cologne, and Dieter Evertz, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengeselischaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 183,487, Sep. 2, 1980, Pat. No. 4,399,104. This application Dec. 16, 1982, Ser. No. 450,414

Claims priority, application Fed. Rep. of Germany, Sep. 7, 1979, 2936223

Int. Cl.³ C08G *18/14*; B29D *27/00*

U.S. Cl. 521—99 **2 Claims**



1. A method of producing a reaction mixture from flowable, foam-forming or solid-forming components which comprises

(a) continuously circulating said components from storage containers via feed pipes to a mixhead and back to said storage containers via return pipes, said feed pipes being provided with metering pumps and said return pipes being provided with adjustable throttling means,

(b) preselecting the desired rate of flow through said feed pipes and storing the preselected value in a controlled computer,

(c) preselecting the circulation pressure through said return pipes to approximate the desired injection pressure in said mixhead and storing the preselected value in a control computer,

(d) measuring the actual rate of flow through said feed pipes and the circulation pressure through said return pipes,

(e) comparing the measured values for both the rate of flow and circulation pressure from step (d) with the stored, preselected values from steps (b) and (c) and, if necessary, adjusting said metering pumps and said throttling means,

(f) repeating steps (d) and (e) until the difference between the measured and stored values for both the rate of flow and the circulation pressure are within preselected limits, and then

(g) discontinuing the circulation through said return pipes of step (a) and mixing the components in said mixhead,

(h) measuring the injection pressure under which the components are mixed in said mixhead, and

(i) repeating the process, using the measured injection pres-

sure from step (h) as said preselected circulation pressure of step (c).

4,448,903

NOVEL SYSTEM FOR THE PRODUCTION OF POLYURETHANES

Tai-Ming Liang, Pittsburgh, and Keith G. Spitler, Bethel Park, both of Pa., assignors to Mobay Chemical Corporation, Pittsburgh, Pa.

Filed Jul. 25, 1983, Ser. No. 517,167
Int. Cl.³ C08G *18/14, 18/63;* C09K *3/00*
U.S. Cl. 521—137 12 Claims

1. A polyurethane product formed by reacting

(a) an isocyanate selected from the group consisting of 4,4'-diisocyanatodiphenylmethane, isocyanates based on 4,4'-diisocyanatodiphenylmethane, and mixtures thereof,

(b) at least one polyether polyol having at least two and no more than three hydroxyl groups,

(c) at least one polymer polyol prepared by polymerizing an ethylenically unsaturated monomer or monomers in a relatively high molecular weight organic compound containing at least two hydroxyl groups, the amount of polymer polyol being such that the combination of component (b) and component (c) has an average hydroxyl functionality of from about 2.10 to about 2.30, and a solids content of from about 2 to about 15 percent by weight,

(d) from about 5 to about 15 percent by weight based on the total weight of components (b), (c) and (d) of a compound selected from the group consisting of ethylene glycol, 1,4-butanediol and mixtures thereof, in the presence of

(e) a blowing agent and, optionally, catalyst and surfactant, wherein the amount of component (a) is such that the isocyanate index is from about 94 to about 105.

10. A blend comprising

(b) at least one polyether polyol having at least two and no more than three hydroxyl groups,

(c) at least one polymer polyol prepared by polymerizing an ethylenically unsaturated monomer or monomers in a relatively high molecular weight organic compound containing at least two hydroxyl groups, the amount of polymer polyol being such that the combination of component (b) and component (c) has an average hydroxyl functionality of from about 2.10 to about 2.30, and a solids content of from about 2 to about 15 percent by weight,

(d) from about 5 to about 15 percent by weight based on the total weight of components (b), (c) and (d) of a compound selected from the group consisting of ethylene glycol, 1,4-butanediol and mixtures thereof,

(e) a blowing agent, and optionally, catalyst and surfactant.

4,448,904

REACTION INJECTION MOLDED ELASTOMER USING A METHYLENE BIS(PHENYLISCOYANATE) CONTAINING 2,4' ISOMER IN AMOUNTS GREATER THAN ABOUT 10 PERCENT

Richard J. G. Dominguez, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Jun. 8, 1983, Ser. No. 502,397
Int. Cl.³ C08G *18/14*
U.S. Cl. 521—160 12 Claims

1. A method for making a reaction injection molded elastomer comprising injecting into a mold cavity of desired configuration, a formulation comprising primary or secondary amine terminated polyethers of greater than about 1,500 molecular weight wherein greater than 50% of the active hydrogens are in the form of amine hydrogens, an amine terminated chain extender and a methylene bis(phenylisocyanate) wherein the 2,4' isomer is present in amounts greater than about 10%.

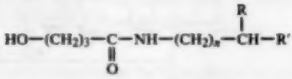
4,448,905

ALCOHOL SUBSTITUTED AMIDES AS CHAIN EXTENDERS FOR POLYURETHANES

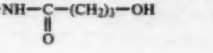
I. Sioun Lin, Oak Ridge; Stanley J. Gromelski, Jr., West Caldwell; Eugene V. Hort, Wayne; Lowell R. Anderson, Morristown, all of N.J., and Earl P. Williams, Pen Argyl, Pa., assignors to GAF Corporation, New York, N.Y.

Filed Sep. 30, 1982, Ser. No. 430,573
Int. Cl.³ C08G *18/72;* C08J *18/10*
U.S. Cl. 521—164 5 Claims

1. A castable elastomeric composition comprising a polyurethane and a compound having the formula



wherein R is hydrogen or methyl, R' is hydroxy or



and n has a value of 1 or 2 in a mole ratio of between about 1:1 and about 1:3.

4,448,906

SURFACE-COATING COMPOSITIONS

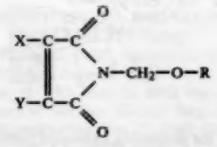
Adolph J. Deinet, East Brunswick, and William B. Woods, Lebanon, both of N.J., assignors to Nuodex Inc., Piscataway, N.J.

Filed Jun. 16, 1982, Ser. No. 389,210
Int. Cl.³ C08K *5/34*
U.S. Cl. 523—122 14 Claims

1. A surface-coating composition having improved resistance to attack by bacteria, fungi, and other microorganisms that comprises

(a) a water-insoluble resinous binder selected from the group consisting of synthetic linear addition polymers prepared by the emulsion polymerization of ethylenically-unsaturated monomers, oleoresinous binders, and mixtures thereof and

(b) 0.1% to 3%, based on the weight of the composition, of a biocidal compound having the structural formula



wherein R represents hydrogen or —COR'; R' represents alkyl, aryl, or aralkyl; and X and Y, which may be the same or different, represent hydrogen or chlorine.

4,448,907

PROCESS FOR CASTING LIGHTWEIGHT METALS

Robert J. Schafer, Worthington, Ohio, assignor to Ashland Oil, Inc., Ashland, Ky.

Continuation of Ser. No. 248,165, Mar. 30, 1981, Pat. No. 4,370,463, which is a continuation of Ser. No. 72,730, Sep. 4, 1979, abandoned, which is a continuation of Ser. No. 915,413, Jun. 14, 1978, abandoned. This application Jan. 24, 1983, Ser. No. 460,426

The portion of the term of this patent subsequent to Jan. 25, 2000, has been disclaimed.

Int. Cl.³ C08G *18/50*; B22C *1/22*

U.S. Cl. 523—139 16 Claims

1. Process for casting lightweight metals comprising:

a. forming a foundry mix, said mix comprising an aggregate, a polyisocyanate, an amine polyol, and a catalyst for forming urethane, wherein the aggregate comprises at least 90% by weight of said mix;

b. shaping said mix to form a foundry shape;

c. allowing said mix to cure after said shape has been formed;

d. forming a shaped lightweight metal casting by using said cured shaped mix and casting melted lightweight metal into contact with said cured shaped mix; and

e. removing the cured shaped mix from said lightweight metal casting.

4,448,908

LATEX, BIOLOGICALLY ACTIVE LATEX CONJUGATES AND A PROCESS FOR THEIR PREPARATION

Hans-Erwin Pauly, Dautphetal; Wolfgang Kapmeyer, Marburg, and Ulrich Seitz, Leonberg, all of Fed. Rep. of Germany, assignors to Behringwerke Aktiengesellschaft, Marburg, Fed. Rep. of Germany

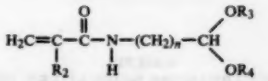
Filed Nov. 12, 1982, Ser. No. 440,986

Claims priority, application Fed. Rep. of Germany, Nov. 13, 1981, 3145082

Int. Cl.³ C08F *257/02*

U.S. Cl. 523—201 5 Claims

1. A latex containing particles comprising a core of a polymer of at least one ethylenically unsaturated monomer and a shell, graft polymerized to said core, of a copolymer comprising at least one ethylenic unsaturated monomer an acetal monomer of the formula



wherein n is 1 to 6, R_2 is H or CH_3, and R_3 and R_4 are alkyl having 2 to 6 carbon atoms, aryl, or some other inert group imparting sufficient water insolubility to said monomer to permit graft polymerization thereof to said core polymer in an aqueous latex of core polymer particles.

5. A method for making a latex as in claim 1 which comprises graft polymerizing said acetal monomer and other shell comonomers on particles of said core polymer by mixing said monomers with an aqueous latex of said core polymer particles in the presence of a detergent, and adding a free radical initiator to said mixture.

4,448,909

METHOD FOR DETERMINING COMPOUNDING PROCESS VARIABLES

Joseph C. Golba, Jr., and Prakash K. Shete, both of Saratoga, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed May 3, 1982, Ser. No. 374,588

Int. Cl.³ C08L *25/02, 25/04, 25/06, 25/08*

U.S. Cl. 523—303 16 Claims

1. A method for obtaining a predetermined additive concentration in a polymer mixture comprising (1) mixing at least one polymer and at least one additive to form a mixture; (2) determining the dielectric constant of the mixture and (3) controlling the amount of additive to obtain a dielectric constant in the mixture which is substantially the same as the dielectric constant of the desired mixture.

4,448,910

AQUEOUS COMPOSITIONS FOR SIZING GLASS FIBERS CONTAINING EMULSIFIED EPOXY RESIN AND CHLOROPROPYLSILANE

Richard M. Haines, Warsaw, and Robert Wong, Granville, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Apr. 25, 1983, Ser. No. 488,474

Int. Cl.³ B32B *17/10*; C08L *39/06, 91/00*

U.S. Cl. 523—402 4 Claims

1. An aqueous composition comprising:

(a) an emulsified liquid epoxy resin or emulsified liquid solution of an epoxy resin, said epoxy resin being a diepoxide reaction product of a bisphenol and an epihalohydrin, said epoxy resin having an epoxy equivalent weight greater than about 250, said epoxy resin comprising from about 1 to about 10 percent of the total weight of said composition;

(b) a lubricant comprising a mineral oil in an amount of about 2 to about 15 percent of the weight of said epoxy resin; and,

(c) as the sole organosilane coupling agent, 3-chloropropyltrimethoxy silane or hydrosate thereof, said silane or hydrosate thereof being present in an amount from about 2 to about 15 percent of the weight of the epoxy resin.

4,448,911

AQUEOUS EPOXY SIZING COMPOSITION FOR GLASS FIBERS AND FIBERS SIZED THEREWITH

Richard M. Haines, Warsaw, and Robert Wong, Granville, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Apr. 12, 1983, Ser. No. 484,124

Int. Cl.³ B32B *17/10*; C08L *39/06, 91/00*

U.S. Cl. 523—411 11 Claims

1. A dilute aqueous composition suitable for sizing glass fibers which consists essentially of emulsified liquid epoxy resin or emulsified liquid solution of a major proportion by weight of epoxy resin and a minor proportion by weight of an organic solvent therefor; about 5 to about 15 percent of the weight of the epoxy resin of emulsified mineral oil; about 5 to about 12 percent of the weight of the epoxy resin of predominantly non-ionic surfactant for emulsifying the epoxy resin or solution thereof and the mineral oil; about 2½ to about 7½ percent of the weight of the epoxy resin of amide anti-static agent; about 2 to about 15 percent of the weight of the epoxy resin of polyvinylpyrrolidone; about 3 to about 15 percent of the weight of the epoxy resin of an organosilane coupling agent having a halogen atom or an epoxy group linked by hydrolysis-resistant bonds through at least one intervening atom to a silicon atom of said silane and also having at least two groups which are readily hydrolyzable at a silicon atom of said silane, and/or hydrolysate thereof; and water.

4,448,912

HEAT HARDENABLE BINDERS COMPRISING AQUEOUS DISPERSIONS OF SOLID EPOXY RESINS, PROCESSES FOR THE PREPARATION THEREOF AND THE USE THEREOF

Wilhelm Becker, Hamburg, and Albrecht Manz, Wiesbaden, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

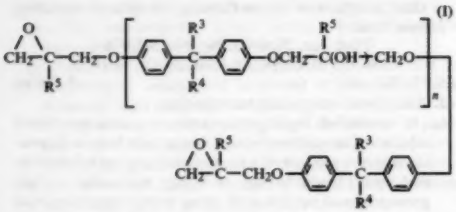
Filed Feb. 18, 1982, Ser. No. 349,840

Claims priority, application Fed. Rep. of Germany, Feb. 21, 1981, 3106529; Aug. 20, 1981, 3132884

Int. Cl.³ C08L 63/02

U.S. Cl. 523—414 14 Claims

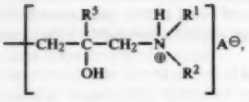
1. A heat hardenable binder composition comprising an aqueous dispersion of a resin derived from a solid epoxy resin of the general structure



(I)

wherein

R^3, R^4 and R^5 independently are methyl or hydrogen and n is an integer from 2 to 20 and the glycidyl groups in part are converted to ammonium groups of the structure



(II)

in which

$A^{\ominus}$ represents the anionic group of a monocarboxylic acid having from 1 to 6 carbon atoms and at least one of the radicals R^1 and R^2 represents hydroxy-alkyl having from 1 to 6 carbon atoms and at most one of R^1 and R^2 is hydrogen and the composition containing in addition an effective amount of a polybasic water-soluble polycarboxylic acid unit containing at least 3 carboxyl functions acting as a hardener and being selected from the group consisting of polycarboxylic acids, anhydrides thereof and acid esters still containing at least three carboxyl functions.

4,448,913

FAST CRYSTALLIZING POLYETHYLENE TEREPHTHALATE COMPOSITIONS

Ernest A. Coleman, Stamford, Conn.; Kevin J. Cronin, Waldwick, N.J.; Frank K. Chu, Ramsey, N.J., and Robin W. Kirwan, West Milford, N.J., assignors to Dart Industries Inc., Northbrook, Ill.

Filed Oct. 29, 1982, Ser. No. 437,651

Int. Cl.³ C08K 5/12; C08L 63/00, 67/02

U.S. Cl. 523—455 12 Claims

1. A composition consisting essentially of polyethylene terephthalate, sodium benzoate and a poly-alpha-olefin.

4,448,914

AQUEOUS PREPARATION AND ITS USE IN THE PRODUCTION OF CERAMIC COMPOSITIONS

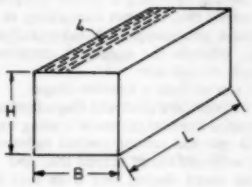
Franz Drinkuth, Odenthal; Wulf von Bonin, Leverkusen; Dietmar Schäpel, Cologne, and Artur Lorenz, Konstanz-Litzelstetten, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 10, 1982, Ser. No. 448,841

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1981, 3151374

Int. Cl.³ C04B 21/06, 33/02; B28B 3/00

U.S. Cl. 524—32 7 Claims



1. In the production of porous ceramic bodies the improvement which comprises the addition to the ceramic mass of an aqueous porosifying agent containing

(a) oils in quantities of from 0.03 to 30% by weight,

(b) water-soluble or swellable vinyl polymers in quantities of from 0.2 to 10% by weight,

(c) water-soluble or swellable polymers based on natural substances in quantities of from 0.01 to 5% by weight,

(d) surfactants in quantities of from 0.01 to 2% by weight and optionally

(e) inorganic or organic powders in quantities of from 0.5 to 30% by weight.

4,448,915

ACETYLENE CARBAMIDE DERIVATIVES, PROCESSES FOR THEIR PRODUCTION, AND ANTIOXIDANTS FOR ORGANIC SUBSTANCES WHICH COMPRISE SUCH DERIVATIVES AS ACTIVE INGREDIENTS

Yutaka Terada, Nishinomiya; Yukoh Takahashi; Shinichi Yachigo, both of Toyonaka, and Tamaki Ishii, Suita, all of Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

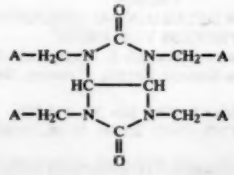
Filed Oct. 19, 1982, Ser. No. 435,187

Claims priority, application Japan, Oct. 19, 1981, 56-167434

Int. Cl.³ C07D 515/08; C08K 5/34

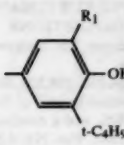
U.S. Cl. 524—93 22 Claims

1. An acetylene carbamide derivative of the general formula (I):



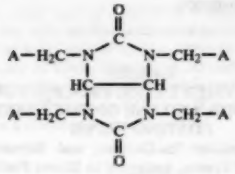
(I)

wherein A represents



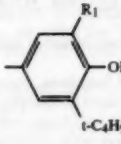
in which R_1 represents a hydrogen atom or an alkyl group having 1 to 4 carbon atoms.

14. A composition comprising an organic substance susceptible to deterioration by light or oxygen and an effective amount to inhibit said deterioration of an acetylene carbamide derivative of the general formula (I):



(I)

wherein A represents



in which R_1 represents a hydrogen atom or an alkyl group having 1 to 4 carbon atoms.

4,448,916

RESIN ANTISTATIC AND STRENGTHENING COMPOSITION

Irvin W. Martenson, Brea, Calif., assignor to American Organics Corp., Placentia, Calif.

Filed Dec. 16, 1980, Ser. No. 217,175

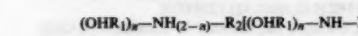
The portion of the term of this patent subsequent to Jul. 27, 1999, has been disclaimed.

Int. Cl.³ C08K *5/20, 5/42;* **D06M** *13/46*

U.S. Cl. 524—106 **11 Claims**

1. A resin composition consisting essentially of a synthetic resin having uniformly dispersed therein from 0.05 to 5 weight percent of stable liquid gel composition consisting essentially of:

(a) from about 70 to 90 weight percent of a fatty amine derivative of the formula:



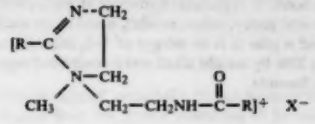
wherein:

R_1 is a C_1 to C_8 alkylene

R_2 is a C_{10} to C_{22} alkyl; and

n is 1 or 2; and

(b) from 10 to about 30 weight percent of a fatty imidazolinium quaternary of the formula:



wherein:

R is a C_{10} to C_{22} alkyl; and

X is C_1 to C_5 alkyl sulfate; and

(c) a gelling agent in an amount from 1 to about 5 percent of the weight of said liquid gel and comprising an organophilic, expanding lattice clay ion exchanged with alkyl quaternary ammonium ions.

4,448,917

SIZE FOR GLASS FIBERS

Denny E. Black, and David W. Garrett, both of Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jan. 6, 1983, Ser. No. 455,789

Int. Cl.³ C08K *5/09*

U.S. Cl. 524—160 **4 Claims**

1. A glass comprising an polyolefin latex, an amino silane, a polymeric film former and an organic acid selected from the group consisting of substituted benzoic acids, benzenedicarboxylic acids, benzenetricarboxylic acids, benzenetetracarboxylic acids, benzenepentacarboxylic acids, benzenehexacarboxylic acids, cyclohexanedicarboxylic acids, fatty acids, aliphatic diacids, aliphatic polyacids, cinnamic acids, benzenediacrylic acids, benzenediacetic acids, naphthoic acids, naphthalenedicarboxylic acids, naphthalenedisulfonic acids and anhydrides of the aforesaid acids said acid or acids being added in an amount sufficient to improve the impact strength of injected molded polypropylene into which glass fibers, coated with said size, are incorporated.

4,448,918

POLY(ARYLENE SULFIDE) COMPOSITION CONTAINING TITANIUM DIOXIDE AND 3-MERCAPTOPROPYLTRIMETHOXYSILANE

John E. Leland, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 15, 1982, Ser. No. 434,662

Int. Cl.³ C08K *5/54, 3/22*

U.S. Cl. 524—262 **19 Claims**

1. A composition comprising poly(arylene sulfide), titanium dioxide and 3-mercaptopropyltrimethoxysilane; wherein the amount of titanium dioxide and 3-mercaptopropyltrimethoxysilane present is sufficient to increase the resistance of the poly(arylene sulfide) composition to carbonization and track formation.

4,448,919

ANTI-ICING COMPOSITIONS

Heihachi Murase, Kanagawa, Japan, assignor to Kansai Paint Company, Hyogo, Japan

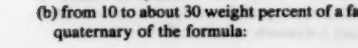
Filed Sep. 30, 1982, Ser. No. 430,018

Int. Cl.³ C08L *83/04*

U.S. Cl. 524—394 **3 Claims**

1. A composition for use in preventing the formation of ice comprising:

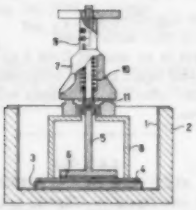
(A) 70 to 99.8% by weight of organopolysiloxane resin comprising recurring structural units of the formula



wherein R represents hydrogen atom or monovalent or-

ganic group attached to the silicon atom by a carbon-to-silicon bond, R′ represents hydrogen atom, C_1 to C_{20} alkyl group, aryl group, oxime residue, n and m are each 0, 1, 2, or 3 and n plus m is an integer of 1–3, and

(B) 0.2 to 30% by weight alkali metal compound represented by the formula



$Ma^{\oplus}{}_{x}{}^{\ominus}$

wherein M represents alkali metal selected from Li, Na and K, X represents inorganic or organic acid group or hydroxyl group and a is an integer of 1 to 4.

4,448,920

REINFORCED ELASTOMER PRODUCTS

Stewart C. Watson, Williamsville, N.Y., assignor to Watson-Bowman Associates, Inc., Getzville, N.Y.

Continuation of Ser. No. 10,252, Feb. 8, 1979, Pat. No. 4,305,172, which is a division of Ser. No. 888,660, Mar. 21, 1978, Pat. No. 4,210,698, which is a continuation-in-part of Ser. No. 616,140, Sep. 24, 1975, Pat. No. 4,080,086. This application Nov. 30, 1981, Ser. No. 326,059

Int. Cl.³ C08K *3/08*

U.S. Cl. 524—439 **7 Claims**

1. An elastomeric load bearing device capable of withstanding large compressive forces without substantial dimensional deformation, said device having an interior core section and an exterior marginal section surrounding the core section on all sides, said core section consisting of an elastomeric binder and a sufficient amount of a filler of metal particles to reduce deformation of the device, the exterior marginal section consisting of an elastomer substantially free of the metal particles of the interior core section.

4,448,921

ROCK WOOL COMPOSITE MATERIAL

Eisuke Yamaya, Funabashi; Osamu Yamamoto, Chiba; Takashi Koike, Funabashi, and Shunji Seino, Tokyo, all of Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo; Nippon Aroma Co., Ltd. and Nitto Boske, both of Fukushima, all of, Japan

Filed Sep. 27, 1982, Ser. No. 424,299

Claims priority, application Japan, Oct. 16, 1981, 56-164311

Int. Cl.³ C08K *3/34*

U.S. Cl. 524—443 **11 Claims**

1. A rock wool composite material comprising a fine rock wool having a diameter of 1 to 10μ and a length of 70 to 500μ and containing substantially no shots and a heat-resistant aromatic polymer which is an aromatic polyamide or aromatic polyamideimide having a freeness value of 150 seconds or more or less than 500 seconds when measured as an 0.3% aqueous dispersion (20° C.), the weight ratio of fine rock wool to the heat-resistant aromatic polymer being 10:90 to 90:10.

4,448,922

COAGULATED POLYURETHANE COATING COMPOSITIONS

John R. McCartney, Westown, Pa., assignor to Norwood Industries, Inc., Malvern, Pa.

Continuation-in-part of Ser. No. 188,329, Sep. 18, 1980, Pat. No. 4,376,148, and a continuation-in-part of Ser. No. 188330, Sep. 18, 1980, Pat. No. 4,342,805, and a continuation-in-part of Ser. No. 321,246, Nov. 13, 1981, Pat. No. 4,366,192, which is a division of Ser. No. 234,464, Feb. 17, 1981, Pat. No. 4,332,710. This application Jul. 14, 1982, Ser. No. 398,259

Int. Cl.³ C08L *75/04*

U.S. Cl. 524—443 **9 Claims**

1. An aqueous coating composition comprising:

an aqueous anionic polyurethane dispersion; and

a salt of hydrofluorosilicic acid;

wherein the pH of said composition is acidic and said composition is thixotropic.

4,448,923

INTERPOLYMER LATEX, PROCESS FOR ITS PREPARATION AND USE OF THE LATEX FOR COATING PAPER

Roland Reeb, Temblay-/les-Gonesse, and Bernard Chauvel, Ermont, both of France, assignors to Rhone Poulenc Specialites Chimiques, Courbevoie, France

Filed Mar. 17, 1983, Ser. No. 476,257

Claims priority, application France, Mar. 24, 1982, 82 04989

Int. Cl.³ C08L *25/10*

U.S. Cl. 524—460 **16 Claims**

1. An interpolymer latex, wherein said interpolymer comprises

(a) a copolymer A of butadiene, styrene and at least one ethylenically unsaturated carboxylic acid, and

(b) a polymer B of at least one halogenoalkyl or halogenoacetoxylalkyl ester of an ethylenically unsaturated monocarboxylic or dicarboxylic acid, said polymer B being at least partially grafted onto the copolymer A.

4,448,924

AQUEOUS INTERPOLYMER EMULSIONS, PROCESS FOR THEIR PREPARATION AND USE OF THE EMULSIONS AS BINDERS FOR COATING PAPER

Roland Reeb, Tremblay/les/Gonesse, and Bernard Chauvel, Ermont, both of France, assignors to Rhone-Poulenc Specialites Chimiques, Courbevoie, France

Filed Mar. 17, 1983, Ser. No. 476,258

Claims priority, application France, Mar. 24, 1982, 82 04988

Int. Cl.³ C08L *25/10*

U.S. Cl. 524—460 **16 Claims**

1. An interpolymer latex, wherein said interpolymer comprises (a) a copolymer A of butadiene, styrene and at least one ethylenically unsaturated carboxylic acid, and (b) a polymer B of at least one halogenohydroxyalkyl ester of an ethylenically unsaturated monocarboxylic or dicarboxylic acid, said polymer B being at least partially grafted onto the copolymer A.

4,448,925

INJECTION MOLDABLE POLYMERS CONTAINING PHTHALIC ANHYDRIDE

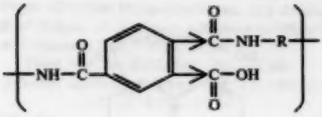
Robert B. Hanson, Oswego, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Aug. 6, 1982, Ser. No. 406,110

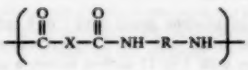
Int. Cl.³ C08G *69/04, 69/26, 73/14*; C08L *77/10*

U.S. Cl. 524—600 **19 Claims**

1. An injection moldable polyamide copolymer comprising about 1 to about 10 percent phthalic anhydride moieties and comprising recurring polyamide A units of



capable of undergoing imidization wherein → denotes isomerization and polyamide B units of



wherein the molar ratio of A units to B units is about 80 to 20 to 20 to 80, and wherein R is a divalent aromatic hydrocarbon radical of from 6 to about 20 carbon atoms or 2 divalent hydrocarbon radicals of from about 6 to 20 carbon atoms joined directly or by stable linkages selected from the group consisting of —O—, methylene, —CO—, $—SO_2—$, and —S— radicals and X is a divalent aromatic radical.

4,448,926

VISCOSIFICATION OF HYDROCARBON FLUIDS

Robert D. Lundberg, Bridgewater, and Dennis G. Peiffer, East Brunswick, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Sep. 13, 1982, Ser. No. 416,926
Int. Cl.³ C08F *8/36*; C08L *23/32, 53/00*
U.S. Cl. 524—612 **9 Claims**

1. A process for gelation of a hydrocarbon liquid, which comprises the steps of:

(a) forming a turbid suspension of a water insoluble block copolymer in an aqueous phase, said block copolymer having the formula:

$$xB—[AB]_n—yA$$

wherein B is a thermoplastic hydrophilic polymer block, A is a thermoplastic hydrophobic polymer block, n is an integer ≧1, x and y are 0 or 1, and y is 1 when n is 1;

(b) adding a polar cosolvent to said turbid solution;

(c) mixing the cosolvent and turbid suspension until a polymeric solution has formed;

(d) adding said polymeric solution to a hydrocarbon liquid; and

(e) mixing the polymeric solution and hydrocarbon liquid until phase separation occurs, wherein said hydrocarbon liquid has gelled.

(f) removal of said aqueous liquid from said hydrocarbon fluid.

4,448,927

METHOD OF POLYMERIZING OLIGOMERS OF POLYDIORGANOSILOXANE IN THE PRESENCE OF FILLER

James R. Falender, Sanford, and John C. Saam, Midland, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Mar. 14, 1983, Ser. No. 474,916
Int. Cl.³ C08L *83/04*
U.S. Cl. 524—860 **24 Claims**

1. A method of polymerizing oligomer in the presence of reinforcing filler comprising

(A) mixing (i) 100 parts by weight of oligomer selected from the group consisting of polydiorganosiloxane (a) of the formula

$$HO(R_2SiO)_xH,$$

polydiorganocyclosiloxane (b) of the formula

$$(R_2SiO)_y,$$

and mixtures thereof, optionally (i) can have present oligomer selected from the group consisting of polydiorganosiloxane (c) of the formula

$$R'_3SiO(R_2SiO)_zSiR'_3,$$

polydiorganosiloxane (d) of the formula

$$R'_3SiO(R_2SiO)_zH,$$

and mixtures thereof wherein each R is a radical selected from the group consisting of methyl, ethyl, propyl, phenyl, vinyl, allyl, and 3,3,3-trifluoropropyl; each R' is monovalent hydrocarbon radical of 6 or less carbon atoms, x is an average value in the range of from 3 to 50, y is an average value in the range of from 3 to 10, and z is an average value in the range of from 0 to 50 inclusive; with (ii) from 2 to 70 parts by weight of reinforcing filler which is acidic or neutral, to yield a paste-type material,

(B) intiating polymerization of (A) in a closed system at a temperature in the range of 70° C. to 150° C. with from 400 to 4000 parts by weight trifluoromethane sulfonic acid per million parts by weight of (i), then

agitating the resulting product of (B) adjusting its temperature to a value in the range of 20° C. to 100° C., polymerizing until the desired increase in molecular weight is reached, then

(D) admixing a Lewis base to inactivate the trifluoromethane sulfonic acid and produce a non-crepeing silicone polymer-filler mixture.

4,448,928

SHELF-STABLE CATALYST COMPONENT FOR RTV SILICONE COMPOSITION

Steven H. Klein, Clifton Park, and Alfred H. Smith, Jr., Ballston Lake, both of N.Y., assignors to General Electric Company, Waterford, N.Y.

Division of Ser. No. 238,333, Feb. 26, 1981, Pat. No. 4,388,433. This application Mar. 17, 1983, Ser. No. 476,174
Int. Cl.³ C08L *83/06*
U.S. Cl. 524—864 **3 Claims**

1. A room temperature vulcanizable silicone rubber composition that has a mixed viscosity of from 100,000 to 1,000,000 centipoise at 25° C. and that does not separate out and does not have any nodules comprising (A) 100 parts by weight of a silanol-end stopped diorganopolysiloxane having a viscosity varying from 1,000 to 1,000,000 centipoise at 25° C. where the organo groups are monovalent hydrocarbon radicals; and (B) from 0 to 300 parts of a filler; and (C) from 1 to 30 parts by weight of a catalyst component provided by:

(a) mixing 100 parts by weight of an organo polysiloxane fluid of a viscosity varying from 1,000 to 50,000 centipoise where the organo group is a monovalent hydrocarbon group, with a first portion of a mixture of crosslinking agent, catalytic promoter and self-bonding additive effective for providing a stable catalyzed paste base mixture of said composition upon heat cycling of said base mixture wherein said first portion constitutes 1 to 15 percent by weight of the total amount of crosslinking agent, catalytic promoter and self-bonding agent utilized in said shelf-stable catalyst component for a room temperature vulcanizable silicone rubber composition and is comprised of:

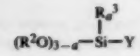
(1) an alkyl silicate crosslinker of the formula:

$$R_mSi(OR^1)_{4-m}$$

or partial hydrolysis producers thereof wherein R and R_1 are monovalent hydrocarbon radicals, m is 0 or 1;

(2) a tin salt catalytic promoter and

(3) a self-bonding additive of the formula:



where R^2 and R^3 are alkyl radicals of 1 to 8 carbon atoms, a is 0 or 1 and Y is a nitrogen-functional radical which is a saturated, unsaturated or aromatic residue which in addition to nitrogen functionality may be functionalized by a radical selected from the class consisting of amino, cyano, thio, oxo, and ester, and multiples and combinations thereof; and after there is a uniform mixture of (a);

(b) adding to the mixture from 10 to 250 parts of filler and mixing the ingredients to a uniform mixture and heating the mixture to a temperature of at least 100° C. for at least 1 hour thereby providing a stable paste-like base mixture; and

(c) mixing into the base mixture a second portion consisting of the remainder of the cross-linking agent, the catalytic promoter and self-bonding additive; and mixing to a uniform fluid mixture by agitating the base mixture and the rest of the ingredients for at least 30 minutes wherein the entire process is carried out in the substantial absence of moisture.

4,448,929

ENCAPSULATION PROCESS

Marius Rodson, El Cerrito, and Herbert B. Scher, Moraga, both of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Continuation of Ser. No. 296,406, Aug. 26, 1981, abandoned. This application Jun. 1, 1982, Ser. No. 383,448

Int. Cl.³ C08L *29/04*

U.S. Cl. 525—57 **2 Claims**

1. A protective colloid for use in an interfacial polymerization process comprising a graft copolymer of polyvinyl alcohol and methyl vinyl ether/maleic acid in a weight ratio of the polyvinyl alcohol to the methyl vinyl ether/maleic acid is in the range of about 1:10 to about 1:300.

4,448,930

POLYCARBONATE BLENDS HAVING AN IMPROVED IMPACT STRENGTH

Sivaram Krishnan, Moers, Fed. Rep. of Germany, and Nelson R. Lazear, McMurray, Pa., assignors to Mobay Chemical Corporation, Pittsburgh, Pa.

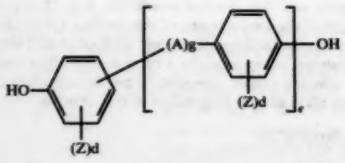
Filed Aug. 2, 1982, Ser. No. 404,066

Int. Cl.³ C08L *69/00*

U.S. Cl. 525—67 **4 Claims**

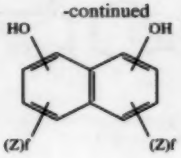
1. A thermoplastic molding composition comprising

(i) a blend of an aromatic polycarbonate resin and a nuclear alkylated polycarbonate resin said blend characterized in that it consists of about 10 to about 90 percent relative to the weight of the blend of an aromatic polycarbonate resin based on one or more of the bisphenols conforming to the structural formula (1) and/or (2)



(1)

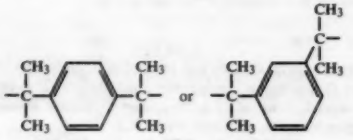
-continued



(2)

wherein

A denotes an alkylene group with 1 to 8 carbon atoms, an alkylidene group with 2 to 8 carbon atoms, a cycloalkylene group with 5 to 15 carbon atoms, a cycloalkylidene group with 5 to 15 carbon atoms, a carbonyl group, an oxygen atom, an —SO— or $-SO_2-$ radical or a radical of the general formula



g denotes 0 or 1;

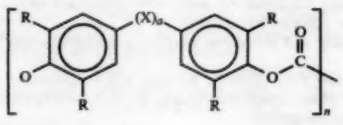
e denotes 0 or 1;

Z denotes F, Cl or Br and if several Z radicals are substituents in one aryl radical, they may be identical or different;

d denotes 0 to 4; and

f denotes 0 to 3,

and about 90 to 10 percent relative to the weight of said blend of a nuclear-alkylated polycarbonate resin characterized in that structural units of formula (3)



(3)

wherein

R is $-CH_3$, $-C_2H_5$ or $-CH(CH_3)_2$ and

X is an alkylene or an alkylidene group having 1 to 5 carbon atoms, a cycloalkylene or a cycloalklidene radical with 5 to 15 carbon atoms, an ether bond or a keto bond,

n is at least 55 and

a is 0 or 1

comprise at least 5 percent relative to the weight of said nuclear-alkylated resin and

(ii) an acrylic rubber interpolymer composite comprising 25 to 95 percent by weight of a first elastomeric phase polymerized from about 75 to 99.8 percent by weight of C_1 to C_6 acrylate, 0.1 to 5 percent by weight of a cross-linking monomer and 0.1 to 5 percent by weight of a graft-linking monomer and about 75 to about 5 percent by weight of a second rigid thermoplastic phase, said acrylic rubber interpolymer composite being present at an amount of between 15 and about 50 phr in relation to the weight of said blend.

4,448,931

POLYPHENYLENE ETHER RESIN

Akitoshi Sugio, Ohmiya; Masanobu Masu, and Akikazu Amagai, both of Tokyo, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Apr. 16, 1982, Ser. No. 369,109
Claims priority, application Japan, Apr. 21, 1981, 56-60417
Int. Cl.³ C08L 61/04
U.S. Cl. 525—68 12 Claims

1. A resin composition comprising a polyphenylene ether resin and a rubber-modified polystyrene resin, wherein at least 80% of the rubber particles based on the total number of rubber particles in the elastomeric phase of the rubber-modified polystyrene resin have a particle diameter in the range of 0.5 to 4 microns, and the elastomeric phase has a particle size distribution index, SDI, defined by the equation

$$SDI = \frac{\Sigma(nx^3)/\Sigma(nx^2)}{\Sigma(nx)/\Sigma n}$$

wherein x is the diameter in microns of the particles, and n is the number of particles having a particle diameter of x microns, of not more than 1.9.

4,448,932

POLYVINYL CHLORIDE MODIFIED WITH BUTADIENE-CONTAINING CORE-SHELL COMPOSITE POLYMERS FOR ENHANCED IMPACT STRENGTH

Yehuda Ozari, Arcadia, Calif.; Suzanne B. Nelsen, Bergenfield, and Andrew Klein, Somerville, both of N.J., assignors to GAF Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 141,513, Apr. 18, 1980, abandoned, and Ser. No. 119,606, Feb. 8, 1980, abandoned. This application Sep. 2, 1982, Ser. No. 414,168
Int. Cl.³ C08L 33/02, 51/04
U.S. Cl. 525—78 16 Claims

1. A polyvinyl chloride resin composition comprising (1) from about 60 to about 95 parts by weight of polyvinyl chloride and (2) from about 5 to about 40 parts by weight of a core-shell composite polymer, said core shell composite polymer being produced by a process consisting essentially of

(a) providing, as the core polymer, an emulsion comprising discrete particles of (1) polybutadiene, (2) a copolymer of butadiene and styrene, or (3) a terpolymer of butadiene, styrene and from about 2 to about 12 weight percent of an alkyl methacrylate in which the alkyl has from 1 to 18 carbon atoms, in an aqueous medium containing a fast acting wetting agent selected from the group consisting of diisopropyl sulfosuccinate, and sodium or potassium salts of dioctyl-, dihexyl-, diisobutyl- and diisopropylsulfosuccinates;

(b) adding to the emulsion, as a final outer shell-forming monomer, or monomer mixture selected from the group consisting of methylmethacrylate and methylmethacrylate with from about 0.01 to about 1% by weight of allylmethacrylate, in an amount sufficient to form, upon polymerization, a substantially complete surface shell around the core polymer, and

(c) reacting the emulsion under conditions effective to polymerize the shell-forming monomer or monomer mixture, by precipitation polymerization on said core polymer surface,

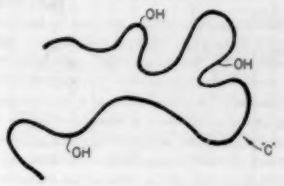
thereby forming discrete composite polymer core particles which are completely encapsulated by an integral outer surface shell of the polymerized shell-forming surface monomer or monomer mixture, which cure particles are free of the shell-forming homopolymer in at least the center thereof.

4,448,933

BETTER FOAMABLE STYRENE AND OTHER OLEFIN POLYMER COMPOSITIONS CONTAINING LIGHTLY CROSSLINKED HYDROXY AND ISOCYANATE LINKAGES

Louis C. Rubens, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Apr. 23, 1981, Ser. No. 256,758
Int. Cl.³ C08F 6/26
U.S. Cl. 525—123 18 Claims



1. Composition comprising, in intimate admixture:

(a) as a fundamental constituent, a hydroxylated, normally-solid, linear olefin copolymer, the copolymer having a hydroxyl functionality of from 2 to 6 average hydroxyl groups per unit weight average molecule; and

(b) a substantially minor proportion of an inter-reactive cross-linking polyisocyanate constituent, with the further limitation that reaction of the polyisocyanate constituent with the hydroxylated copolymer provides a copolymer having a crosslinking coefficient of from about 0.8 to about 3 which results in a visually detectable gel in a solvent which dissolves the corresponding noncrosslinked hydroxylated polymers, and that such composition on incorporation of a blowing agent therein is foamable to a thermal collapse resistant thermoplastic foam.

4,448,934

BLENDS OF IONIC ELASTOMERS AND NYLON

Ebon P. Weaver, Naugatuck, Conn., assignor to Uniroyal, Inc., New York, N.Y.

Filed Feb. 2, 1982, Ser. No. 345,270
Int. Cl.³ C08F 27/06; C08L 23/32
U.S. Cl. 525—184 4 Claims

1. A polymeric blend which comprises an admixture of:

5 to 60 parts of an ionically crosslinked elastomer containing neutralized sulfonated EPDM;

40 to 95 parts of nylon 1; and

5 to 50 parts, per 100 parts of said elastomer, of zinc stearate;

all said parts being by weight.

4,448,935

PROCESS FOR THE PREPARATION OF CROSSLINKED, SULFONATED STYRENE POLYMERS

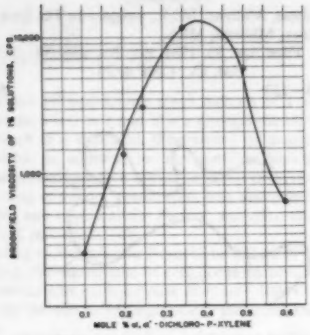
Carmine P. Iovine, and Dilip K. Ray-Chaudhuri, both of Bridgewater, N.J., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

Continuation-in-part of Ser. No. 878,204, Feb. 16, 1978, abandoned, which is a continuation-in-part of Ser. No. 694,785, Jun. 10, 1976, abandoned. This application Jul. 21, 1982, Ser. No. 400,216
Int. Cl.³ C08F 8/36, 8/00
U.S. Cl. 525—343 7 Claims

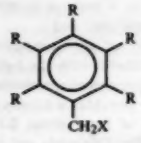
1. A process for the simultaneous crosslinking and sulfonation of polystyrene and styrene copolymers containing at least 5% by weight styrene and having a molecular weight of 800–4,000,000 comprising the steps of:

(a) dissolving the polystyrene or styrene copolymer in an aliphatic hydrocarbon or chlorinated hydrocarbon as a sulfonating solvent;

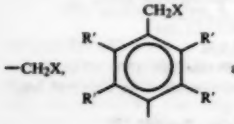
(b) adding thereto from 0.1 to 5 mole percent of a crosslinking reagent selected from the group consisting of:



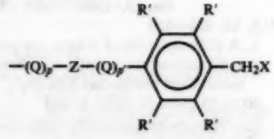
(i)



wherein one or two of the R substituents are selected from the group consisting of:



and



wherein X is —OH, —Cl, or —Br; Q is oxygen or sulfur; p and p' are independently selected integers having the value 0 or 1; Z is a radical containing from 1 to 10 carbon atoms inclusive and is selected from the group consisting of straight and branched chain alkylene radicals; and the remaining R and R' are selected from the group consisting of hydrogen, C_1–C_3 alkyl and C_1–C_3 alkoxy radicals; and

(ii) polynuclear aryl compounds containing two or three —CH_2X groups wherein X is as defined above, which compounds may be further substituted with substituent groups selected from the group consisting of —OH, C_1–C_3 alkyl radicals and C_1–C_3 alkoxy radicals; and

(c) adding the resultant solution to a sulfonating reagent derived from the addition of sulfur trioxide and a trialkyl phosphate while maintaining the reaction at a temperature of 5° to 25° C. whereby crosslinked sulfonated polymer is immediately precipitated; and

(d) recovering the resultant precipitated crosslinked sulfonated polymer.

4,448,936

POLYURETHANE RESIN COMPOSITION

Huei-Hsiung Wang, and Chyuan-chyuan Wang, both of No. 6, Alley 69, La. 492, Sec. 1, Hsi Tun Rd., Taichung, Taiwan

Filed Apr. 8, 1982, Ser. No. 366,689
Int. Cl.³ C08L 75/04, 77/02
U.S. Cl. 525—424 **5 Claims**

1. A polyurethane resin composition capable of heat transfer printing comprising:

(a) one polyurethane resin; and

(b) nylon 6 resin in an amount of 10 to 30 parts by weight per 100 parts by weight of said polyurethane resin.

2. A process for manufacturing a polyurethane resin composition capable of heat transfer printing comprising the steps of:

(a) preparing a solution blend of the polyurethane resin composition by mixing a polyurethane solution and nylon 6 resin solution, the nylon 6 resin solution being in an amount between 10 to 30 parts by weight per 100 parts by weight of the polyurethane solution; and

(b) drying the solution mixed according to step (a) to eliminate solvents from the polyurethane resin composition.

4,448,937

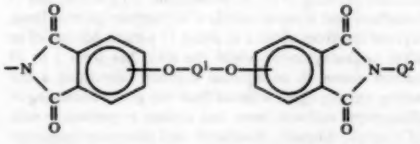
BLENDS OF POLYETHERIMIDES AND BLOCK POLY(ESTERAMIDES)

Richard C. Bopp, West Coxsackie; Joseph C. Golba, Jr., Ballston Spa, both of N.Y., and Scott A. White, Louisville, Ky., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 21, 1983, Ser. No. 487,495
Int. Cl.³ C08L 77/12, 79/08
U.S. Cl. 525—432 **16 Claims**

1. A resinous composition comprising

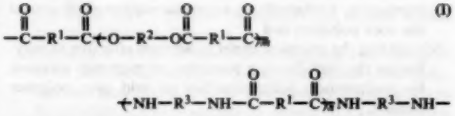
(A) about 99–1% by weight of at least one polyetherimide consisting essentially of chemically combined units of the formula



(II)

wherein Q^1 is a divalent aromatic hydrocarbon-based radical and Q^2 is a divalent hydrocarbon-based radical, and

(B) about 1–99% of at least one block poly(esteramide) having the formula,



(I)

wherein each R^1 is independently a divalent aliphatic hydrocarbon-based radical, each R^2 is independently a divalent aliphatic hydrocarbon-based radical, each R^3 is independently a divalent aromatic hydrocarbon-based radical, and m and n are each at least about 100.

4,448,938

MODIFIED ISOCYANATE COMPOSITIONS, THEIR PRODUCTION AND USES FOR POLYURETHANE MANUFACTURE

Alphonse E. Bruyninckx; Martin F. Brooks, both of Everberg, Belgium, and David Thorpe, Manchester, England, assignors to Imperial Chemical Industries PLC, London, England

Filed Dec. 6, 1979, Ser. No. 100,877

Claims priority, application United Kingdom, Dec. 11, 1978, 47954/78

Int. Cl.³ C08G 18/28

U.S. Cl. 525—457 4 Claims

1. A liquid isocyanate composition which has low temperature stability such that when stored it remains crystal-free for more than 10 days at 0° C., said composition being derived from diphenylmethane diisocyanate and comprising:

(A) the product of reaction of 90–45% by weight of diphenylmethane diisocyanate with 10–55% by weight of a polyether of an alcohol or an amine of molecular weight from 600 to 10,000, the indicated percentages by weight being based on the weight of the reaction product; and a uretonimine modified diphenylmethane diisocyanate, the weight ratio of A to B being from 19:1 to 1:1.

4,448,939

POLYURETHANES PREPATED USING POLY(SILYLDIAMINES)

Michael J. Fasolka, Pennsburg, and Barton Milligan, Coplay, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jul. 30, 1982, Ser. No. 403,459

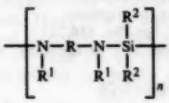
Int. Cl.³ C08L 75/04, 83/16

U.S. Cl. 525—474 23 Claims

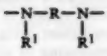
1. A composition of matter comprising

(a) a polyisocyanate,

(b) a poly(silyldiamine) containing the unit formula



wherein the grouping



is a divalent organic radical terminated by two nitrogen atoms with R being a divalent organic moiety, or a divalent alicyclic radical in which R and R^1 with the two nitrogen atoms form a cyclic diamine structure, R^1 is hydrogen or a monovalent hydrocarbon, R^2 is a monovalent hydrocarbon, and n is an integer greater than 1, and

(c) a polyol.

4,448,940

THERMOSETTING RESIN COMPOSITION AND PREPOLYMER THEREOF

Tohru Koyama; Motoyo Wajima, and Junji Mukai, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 26, 1982, Ser. No. 436,720

Claims priority, application Japan, Oct. 30, 1981, 56-172732

Int. Cl.³ C08G 59/40

U.S. Cl. 525—504 16 Claims

1. A thermosetting resin composition comprising

(A) at least one polyfunctional epoxy compound having two or more 1,2-epoxy groups,

(B) at least one polyfunctional nitrile compound having two or more nitrile groups and

(C) at least one curing catalyst which can form both cyanurate rings and oxazoline rings or only oxazoline rings during curing of said composition.

4,448,941

RESIN BINDER FOR FIBER COMPOSITE MATERIALS

Mo-Fung Cheung, Farmington Hills; David L. Garrett, Jr., Southfield, and Henk van Oene, Detroit, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 7, 1981, Ser. No. 328,278

Int. Cl.³ C08G 59/16

U.S. Cl. 525—528 15 Claims

1. A method of making a free-radical curable amino vinyl resin binder composition for fiber reinforced composite materials which comprises reacting about 80 to about 20 weight percent of an amino vinyl prepolymer and about 20 to about 80 weight percent of a crosslinkable ethylenically unsaturated monomer diluent, having one or more vinyl groups, which crosslinks with said prepolymer during curing by means of peroxide or peroxide sensitizing initiators, wherein said prepolymer consists essentially of the two step reaction product of:

(A) an epoxy-amino alcohol adduct reaction product of

(i) polyepoxide containing terminal epoxide groups; and

(ii) secondary amino alcohol, wherein (i) and (ii) are reacted in about a 1:1-1.2 ratio of chemical equivalent of epoxide to amino groups so as to react essentially all of said epoxide groups to form said adduct having hydroxyl groups; and

(B) unsaturated monomer having a terminal vinyl group and having a hydroxy reactive functionality capable of reacting with said hydroxyl groups of said adduct and being selected from the group consisting of glycidyl acrylate, glycidyl methacrylate and isocyanatoethyl methacrylate,

wherein (A) and (B) are reacted in an amount sufficient to provide between about 0.3-1.0 equivalents of said hydroxy reactive functionality of said monomer (B) for each equivalent of said hydroxyl group of said adduct, and wherein said solvent which optionally may be employed in said method consists essentially of said diluent.

4,448,942

PROCESS FOR THE PRODUCTION OF HYDANTOINS

Bernhard Schulte, Krefeld; Wolfgang Jakob, Moers; Willi Dünwald, Leverkusen, and Karl-Heinrichrich Meyer, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

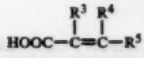
Filed Nov. 1, 1982, Ser. No. 438,270

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1981, 3144701; Nov. 11, 1981, 3144697

Int. Cl.³ C08G 73/00, 73/06

U.S. Cl. 525—540 5 Claims

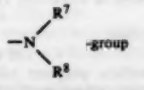
1. A process for the production of a compound having at least one hydantoin ring, wherein a polyimide is reacted with an acid corresponding to the formula



wherein

R^3 and R^4 represent hydrogen or an alkyl radical;

R^5 represents a CN— group, a CHO— group, $COOR^6$— group or



in which R^6, R^7 and R^8 represent alkyl, cycloalkyl, alke-

nyl or alkinyl; at temperatures of from about −20° to 250° C.

4,448,943

METHOD FOR MEASURING POLYMERIZATION PROCESS VARIABLES

Joseph C. Golba, Saratoga, and Marion G. Hansen, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed May 3, 1982, Ser. No. 374,585

Int. Cl.³ C08G 63/62, 73/10

U.S. Cl. 526—59 15 Claims

1. A method for controlling continuous polymerization process variables comprising (1) mixing at least one monomer and optionally additives to form a mixture; (2) polymerizing the mixture to form a polymer; (3) monitoring the dielectric constant of the mixture; and (4) controlling the process variables so as to obtain a dielectric constant which is substantially the same as the dielectric constant of the desired polymer.

4,448,944

PROCESS FOR THE PREPARATION OF A POLYOLEFIN, AND A CATALYST FOR THIS PROCESS

Joachim Berthold, Eppstein; Bernd Diedrich, Eschborn; Rainer Franke, Niedernhausen; Jürgen Hartlapp, Hattersheim am Main; Werner Schäfer, and Wolfgang Strobel, both of Hofheim am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 14, 1982, Ser. No. 388,022

Claims priority, application Fed. Rep. of Germany, Jun. 20, 1981, 3124222

Int. Cl.³ C08F 4/02, 10/02

U.S. Cl. 526—119 3 Claims

1. A process for the polymerization of ethylene alone or in combination with a minor amount of a 1-olefin of the formula R^4-CH=CH_2 in which R^4 denotes an alkyl radical having 1 to 10 carbon atoms, in the presence of a catalyst comprised of a component which contains magnesium and titanium (component A) and an organometallic compound of the Groups I to III of the periodic system (component B), which comprises carrying out the polymerization in the presence of a catalyst in which the component A has been prepared by a procedure in which, in a first reaction stage, a magnesium alcoholate of the formula $Mg(OR)_2$, wherein R represents identical or different alkyl radicals having from 1 to 6 carbon atoms, is reacted with titanium tetrachloride in a hydrocarbon at a temperature of 50° to 100° C., 1 to 5 moles of titanium tetrachloride per mole of magnesium alcoholate being employed, the soluble constituents are then removed by washing with a hydrocarbon and the resulting solid is suspended in a hydrocarbon and is subjected, in a second reaction stage, with the addition of 0.1 to 3 moles chloroalkoxytitanate per mole of magnesium alcoholate, to a heat treatment for 10 to 100 hours at a temperature of 110° to 200° C., with evolution of alkyl chloride, until no further alkyl chloride is split off, and the solid is then freed from soluble reaction products by washing several times with a hydrocarbon.

4,448,945

METHOD OF MAKING EMULSION POLYMERS

Herbert Fink, Bickenbach; Werner Siol, Pfungstadt; Horst Dinklage, Dieburg, and Hubert Rauch, Weiterstadt, all of Fed. Rep. of Germany, assignors to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

Continuation of Ser. No. 346,004, Feb. 5, 1982, abandoned. This application Sep. 26, 1983, Ser. No. 534,939

Claims priority, application Fed. Rep. of Germany, Feb. 21, 1981, 3106502

Int. Cl.³ C08F 4/04

U.S. Cl. 526—193 13 Claims

1. A method for making an emulsion polymer which is completely soluble in organic solvents, which method comprises emulsion polymerizing, in an aqueous phase, a monomer component containing more than 70 percent by weight of at least one water insoluble free radically polymerizable monounsaturated monomer suitable for preparing an emulsion polymer and selected from the group consisting of esters of acrylic acid and of methacrylic acid having 1 to 8 carbon atoms in the alcohol portion, styrene, vinyltoluene, and alpha-methyl-styrene, in the presence of 0.1 to 1 percent, by weight of the aqueous phase, of a free radical forming azo initiator as the sole initiator, said initiator being soluble to at least about 0.1 percent by weight at 20° C. in a solvent selected from the group consisting of methylethyl ketone, ethyl acetate, tetrahydrofuran, cyclohexanone, toluene, xylene, and trichloroethylene, and in the further presence of 0.01 to 2 percent, by weight of the aqueous phase, of a free emulsifier acid having a pK_a value no greater than 4.5 and selected from the group consisting of organic sulfonic acids, organic phosphonic acids, the monoesters and diesters of phosphoric acid with hydrophobic organic hydroxy compounds or with oxyethylation products of the hydroxy compounds, perfluoralkane carboxylic acids having from 8 to 20 carbon atoms in the perfluoroalkyl portion, free acids of long-chain sarcosides of the formula

$$R—N(CH_3)—CH_2—COOH,$$

wherein R is a long-chain saturated or unsaturated aliphatic hydrocarbon having from 8 to 18 carbon atoms, and alkylsulfamidoacetic acids having 8 to 20 carbon atoms in the alkyl portion, said free emulsifier acid being non-polymerizable under the emulsion polymerization conditions employed.

4,448,946

PROCESS FOR THE PREPARATION OF NONCELLULAR POLYURETHANE ELASTOMERS BASED ON 4,4-DIISOCYANATO-1,2-DIPHENYLETHANE

Herbert Stutz, Karlsruhe; Karl H. Illers, Otterstadt; Herbert Haberkorn, Gruenstadt, and Walter Heckmann, Weinheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Sep. 16, 1982, Ser. No. 418,717

Claims priority, application Fed. Rep. of Germany, Sep. 26, 1981, 3138421

Int. Cl.³ C08G 18/76

U.S. Cl. 528—67 5 Claims

1. In a process for the preparation of a noncellular polyurethane elastomer comprising reacting (a) an organic polyisocyanate; (b) a polyhydroxyl compound having an average functionality of 2 to 6 and an average molecular weight of 700 to 10,000; (c) a chain extender having a molecular weight less than 500 and selected from the group consisting of aliphatic diols, aromatic diamines, and mixtures thereof; and (d) catalysts and other additives; the improvement comprising employing as the organic polyisocyanate 4,4'-diisocyanato-1,2-diphenylethane containing 0 to 5 weight percent of the 2,2'- and 2,4'-isomers in an amount equal to 0.8 to 1.3 isocyanate groups per mole of Zerewitinoff active hydrogen atoms in the combined polyhydroxyl compound and chain extender.

4,448,947

ONE-CAN TYPE PRESSURE-SENSITIVE ADHESIVE COMPOSITION

Jun-ichi Miyake; Kyuya Yamazaki, and Yoshio Kamatani, all of Osaka, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Nov. 29, 1982, Ser. No. 445,094

Claims priority, application Japan, Dec. 8, 1981, 56-197939

Int. Cl.³ C08G 18/77, 18/78, 18/79; C07D 273/04

U.S. Cl. 528—73 11 Claims

1. A one-can type pressure-sensitive adhesive composition which contains a polyurethane polyol obtained by the reaction of an isocyanate component having an oxadiazine-2,4,6-trione ring, other organic diisocyanate and a polyol component having a molecular weight of 400 to 50,000 at such a proportion

that the number of oxadiazinetrione ring/the total number of free isocyanate group is in the range of ¼ to 1/20 and (the number of oxadiazinetrione rings + the total number of free isocyanate groups)/(the number of hydroxyl group of the polyol component) is less than 1.0.

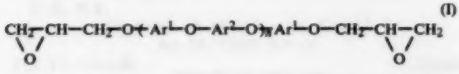
4,448,948

EPOXY RESIN AND THE PROCESS FOR ITS PRODUCTION

Kazumi Tsubaki; Hiroshi Morinaga, and Joei Yukawa, all of Ichihara, Japan, assignors to Nissan Chemical Industries, Ltd., Tokyo, Japan

Filed Jan. 14, 1983, Ser. No. 458,039
Claims priority, application Japan, Feb. 3, 1982, 57-14827
Int. Cl.³ C08G *59/02, 59/24, 59/30*
U.S. Cl. 528—95 **8 Claims**

1. An epoxy resin substantially represented by the general formula



(I)

where Ar^1 is a residual group of a dihydric phenol derived from a compound having one or two benzene nuclei, Ar^2 is residual group of a halogen-substituted benzenoid compound having two halogen atoms on its nuclei and represented by the formula $—Ar^3—Y—Ar^4—$ where each of Ar^3 and Ar^4 is a hydrocarbon group having a divalent benzene nucleus and Y is a sulfone group or a carbonyl group, and n is an integer of from 1 to 50.

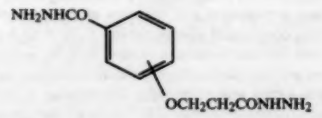
4,448,949

LATENT CURING AGENTS FOR EPOXY RESINS

Nobuo Ito, Oiso; Koji Takeuchi, Yokohama; Masahiro Abe, and Kiyomiki Hirai, both of Kawasaki, all of Japan, assignors to General Electric Company, Mt. Vernon, Ind.

Filed Jul. 22, 1983, Ser. No. 516,332
Claims priority, application Japan, Jul. 30, 1982, 57-134453
Int. Cl.³ C08G *59/44*
U.S. Cl. 528—99 **7 Claims**

1. A curable, storage-stable epoxy resin composition comprising (a) an epoxy resin having an average of more than one epoxy group per molecule and (b) as curing agent a compound having the formula



4,448,950

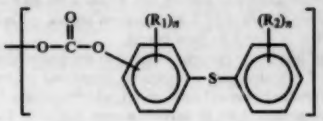
POLYCARBONATE HAVING IMPROVED CRITICAL THICKNESS

Arthur L. Baron, New Martinsville, W. Va., and Parameswar Sivaramakrishnan, Pittsburgh, Pa., assignors to Mobay Chemical Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 872,393, Jan. 25, 1978, abandoned, which is a continuation-in-part of Ser. No. 767,607, Feb. 10, 1977, abandoned, which is a continuation-in-part of Ser. No. 687,490, May 18, 1976, abandoned. This application Aug. 14, 1980, Ser. No. 178,069
Int. Cl.³ C08G *8/02, 63/62*
U.S. Cl. 528—128 **10 Claims**

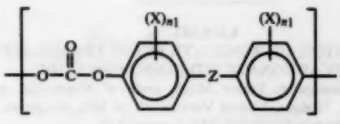
1. A copolycarbonate resin with a melt flow rate of 1 to 24 gram/10 min. at 300° C. (ASTM 1238) consisting essentially of:

2 up to 15 mole percent of the sulfur containing structural unit



(I)

wherein R_1 and R_2 are hydrogen or lower alkyl groups having 1 to 4 carbon atoms and n equals 0 to 2, and from greater than 85 to 98 mole percent of the structural unit



(II)

wherein X is hydrogen, a C_1 to C_4 alkyl radical or a halogen and n_1 equals 1 or 2, and Z is a single bond, an alkylene or alkylidene radical with 1 to 7 carbon atoms, a cycloalkylene or cycloalkylidene radical with 5 to 12 carbon atoms, —O—, —CO—, —SO— or $—SO_2—$.

4,448,951

PHENOLIC POLYOLS AND RIGID CELLULAR COMPOSITIONS DERIVED THEREFROM

John P. Rupert, Wadsworth, Ohio, and John T. Patton, Jr., Wyandotte, Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Jan. 17, 1983, Ser. No. 458,283
Int. Cl.³ C08G *8/36*
U.S. Cl. 528—129 **5 Claims**

1. A modified high ortho benzyllic ether-containing resole polyol obtained by a process comprising reacting at 100° C. to 130° C.

(a) a phenol which is free of ortho substituents,

(b) a molar excess relative to the phenol of a nonaqueous aldehyde having the formula RCHO where R is hydrogen, an alkyl group of 1 to 6 carbon atoms, or a halogenated alkyl group of 1 to 3 carbon atoms, and

(c) less than fifty mole percent relative to the phenol of an aliphatic hydroxyl compound having 1 to 4 hydroxyl groups, 1 to 12 carbon atoms, and 0 to 5 ether oxygen atoms,

in the presence of a catalytic amount of a metal derivative selected from the group consisting of (i) carboxylate salts of divalent ions of Mn, Zn, Cd, Mg, Co, Ni, Fe, Pb, Ca, Ba,

and di(C_1–C_5 alkyl)tin where the carboxylate ions each contains 1 to 20 carbon atoms, and (ii) $(C_nH_{2n+1})_4 TiO_4$ where n is an integer of 3 to 8.

4,448,952

HALOGENATED PHENOLIC POLYOLS AND RIGID CELLULAR COMPOSITIONS MADE THEREFROM

John T. Patton, Jr., Wyandotte, Mich., and John P. Rupert, Wadsworth, Ohio, assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Jan. 17, 1983, Ser. No. 458,286
Int. Cl.³ C08G *8/36*
U.S. Cl. 528—129 **7 Claims**

1. A modified benzyl ether-containing resole polyol obtained by reacting at a temperature of 100° to 130° C. a mixture comprising

(a) a phenolic component comprising phenol or a mixture of phenol and a phenol which is substituted in the meta or

para position with halogen, C_1–C_{12} alkyl, or halogen-substituted alkyl of 1 to 6 carbon atoms;

(b) a molar excess relative to the phenolic component of a non-aqueous aldehyde having the formula RCHO where R is hydrogen, alkyl of 1 to 5 carbon atoms, or halogenated alkyl of 1 to 5 carbon atoms;

(c) less than fifty mole percent relative to the phenolic component of a hydroxylic component consisting of one or more aliphatic hydroxyl compound which contain 1 to 4 hydroxyl groups, 1 to 12 carbon atoms, and 0 to 5 ether oxygen atoms wherein the hydroxylic component contains at least 15 mole percent of a halogenated alcohol having 2 to 4 carbon atoms and at least 60 weight percent of halogen having an atomic number of 17 to 35; and

(d) an effective amount of a metal salt catalyst.

4,448,953

PREPARATION OF BENZOATE ESTER TERMINATED POLYCARBONATE WITH AROYL HALIDE

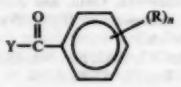
Niles R. Rosenquist; Victor Mark, both of Evansville, and Charles V. Hedges, Mount Vernon, all of Ind., assignors to General Electric Company, Mt. Vernon, Ind.

Continuation of Ser. No. 221,935, Dec. 31, 1980, abandoned. This application Aug. 18, 1982, Ser. No. 409,304

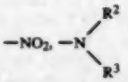
Int. Cl.³ C08G 63/62

U.S. Cl. 528—198 **10 Claims**

1. A process for preparing an aromatic polycarbonate resin of controlled molecular weight which comprises interfacially reacting in water and an organic solvent, a dihydric phenol, a carbonate precursor and a molecular weight controlling effective amount of a compound of the formula



wherein n is an integer having a value of from 0 to 5 inclusive; Y is a halide or hydroxyl; and each R is independently selected from the group consisting of alkyl radicals, aryl radicals, alkaryl radicals, aralkyl radicals, alkoxy radicals, aryloxy radicals, halides,



radicals wherein R^2 is selected from hydrogen, alkyl radicals or acyl radicals or R^3 is an acyl radical or —C≡N.

4,448,954

SINGLE STAGE PRODUCTION OF IMPROVED HIGH MOLECULAR WEIGHT POLYBENZIMIDAZOLE WITH ORGANOSILICON HALIDE CATALYST.

Eui W. Choe, Randolph, and Anthony B. Conciatori, Chatham, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Division of Ser. No. 409,008, Aug. 17, 1982. This application Apr. 7, 1983, Ser. No. 482,767

Int. Cl.³ C08G 73/18

U.S. Cl. 528—207 **7 Claims**

1. A single stage melt polymerization process for the production of high molecular weight polybenzimidazole which comprises polymerizing at least one monomeric aromatic compound having a pair of amine substituents in an ortho position relative to each other and a carboxylic acid group positioned on an aromatic nucleus, by heating the monomer above its melting temperature in contact with an organosilicon halide polymerization catalyst.

4,448,955

PRODUCTION OF IMPROVED HIGH MOLECULAR WEIGHT POLYBENZIMIDAZOLE WITH TIN CONTAINING CATALYST

Eui W. Choe, Randolph, and Anthony B. Conciatori, Chatham, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Division of Ser. No. 399,610, Jul. 19, 1982. This application Apr. 7, 1983, Ser. No. 482,768

Int. Cl.³ C08G 73/18

U.S. Cl. 528—207 **6 Claims**

1. A single stage melt polymerization process for the production of high molecular weight polybenzimidazole which comprises polymerizing at least one monomeric aromatic compound having a pair of amine substituents in an ortho position relative to each other and a carboxylic acid group positioned on an aromatic nucleus, by heating the monomer above its melting temperature in contact with a tin-containing polymerization catalyst.

4,448,956

POLYMERIZATION OF LACTAM WITH GRAFT COPOLYMER PROMOTER

Gerd M. Lenke, Mogadore; Earl G. Melby, Uniontown, and Hubert J. Fabris, Akron, all of Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio

Filed May 10, 1983, Ser. No. 493,383

Int. Cl.³ C08G 69/20

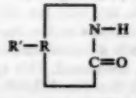
U.S. Cl. 528—312 **15 Claims**

1. The method which comprises mixing together and copolymerizing to form a solid polyamide

(a) a major amount of weight of the mixture of at least one lactam monomer and

(b) a minor amount by weight of the mixture of at least one graft copolymer promoter having a Tg of from about −40° to −100° C. and comprising (I) from about 4 to 13 parts by weight of maleic anhydride grafted on (II) 100 parts by weight of at least one liquid polymer having an average molecular weight of from about 1,000 to 30,000 and being selected from the group consisting of (A) homopolymers, copolymers and mixtures of the same of polymerizable conjugated dienes having from 4 to 6 carbon atoms and (B) copolymers of at least 50% by weight of at least one polymerizable conjugated diene having from 4 to 6 carbon atoms and essentially the balance at least one copolymerizable monomer selected from the group consisting of at least one monovinyl aryl monomer having from 8 to 12 carbon atoms, acrylonitrile and methacrylonitrile and mixtures of the same in admixture with

(c) an effective catalytic amount of an anionic lactam polymerization catalyst (lactamate salt), the lactam of (a) and (c) having the formula



where R is an alkylene radical of from 5 to 11 carbon atoms and R′ is hydrogen or an alkyl radical of from 1 to 4 carbon atoms.

4,448,957

PROCESS FOR PRODUCING AROMATIC POLYAMIDE-IMIDE

Kenji Nagaoka, Hirakata, Japan, assignor to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Apr. 13, 1983, Ser. No. 484,475
Claims priority, application Japan, Apr. 16, 1982, 57-64195
Int. Cl.³ C08G 73/14
U.S. Cl. 528—351 11 Claims

1. In a process for producing an aromatic polyamide-imide by polycondensation of an aromatic tricarboxylic acid and/or aromatic tricarboxylic anhydride and an aromatic diamine by heating in the presence of a dehydration catalyst, the improvement which comprises using a solvent containing sulfolane as a reaction medium.

4,448,958

PURIFICATION OF CEFORANIDE

Paul D. Sleezer, Dewitt, and Richard R. Smith, Fayetteville, both of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Filed Oct. 20, 1982, Ser. No. 435,583
Int. Cl.³ C07D 501/20
U.S. Cl. 544—20 6 Claims

1. The process for the purification of ceforanide having from trace amounts up to 36.5% by weight of impurities comprising the consecutive steps of

(a) forming the salt N,N-dimethylbenzylamine 7-[α-(2-aminomethylphenyl)acetamido]-3-[(1-carboxymethyltetrazol-5-ylthio)methyl]-3-cephem-4-carboxylate by mixing approximately equimolar amounts of N,N-dimethylbenzylamine and zwitterionic 7-[α-(2-aminomethylphenyl)-acetamido]-3-](1-carboxymethyltetrazol-5-ylthio)methyl]-3-cephem-4-carboxylic acid in an aqueous solvent mixture containing a water-miscible neutral organic solvent at a temperature in the range of 5° C. to 35° C.;

(b) adding a supplementary water-miscible neutral organic solvent to said mixture in sufficient amount of cause precipitation of said salt in crystalline form;

(c) recoverying said solid salt;

(d) dissolving said salt in water or a mixture thereof with a water-miscible organic solvent at substantially neutral or acidic pH; and

(e) adjusting the solution to pH 2.3–2.5 to precipitate the purified, crystalline, zwitterionic 7-[α-(2-aminomethyl-phenyl)acetamido)-3-[(1-carboxymethyltetrazol-5-ylthio)-methyl]-3-cephem-4-carboxylic acid.

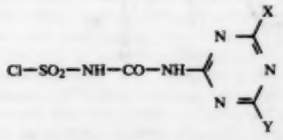
4,448,959

CHLOROSULFONYL UREA TRIAZINES

Beat Böhner, Binningen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 313,064, Oct. 19, 1981, Pat. No. 4,391,976. This application Sep. 20, 1982, Ser. No. 419,687
Int. Cl.³ C07D 251/46, 251/42, 251/16, 251/42
U.S. Cl. 544—213 7 Claims

1. Chlorosulfonyl urea compounds of the formula VI



VI

wherein

X is C_1–C_2-alkyl, C_1–C_3-alkoxy, C_1–C_2-alkylthio, methoxymethyl, methoxyethyl, CF_3 or chlorine, and

Y is C_1–C_2-alkyl, C_1–C_3-alkoxy, C_1–C_2-alkylthio, methoxymethyl or methoxyethyl.

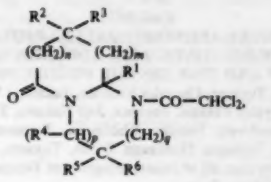
4,448,960

DICHLOROACETAMIDES, HERBICIDES CONTAINING ACETANILIDES AS HERBICIDAL ACTIVE INGREDIENTS AND THE DICHLOROACETAMIDES AS ANTAGONISTS, AND THE USE OF THESE HERBICIDES IN CONTROLLING UNDESIRED PLANT GROWTH

Wolfgang Rohr, Wachenheim; Hanspeter Hansen; Peter Plath, both of Ludwigshafen, and Bruno Wuerzer, Otterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 17, 1980, Ser. No. 207,337
Claims priority, application Fed. Rep. of Germany, Dec. 3, 1979, 2948535
Int. Cl.³ C07D 239/70, 487/00; E05B 65/10
U.S. Cl. 544—282 4 Claims

1. A dichloroacetamide of the formula



(I)

where

R^1 is hydrogen, methyl or ethyl,

R^2 and R^3 are identical or different and are hydrogen, methyl or methoxy,

R^4 is hydrogen or methyl and

R^5 and R^6 are identical or different and are hydrogen or methyl, and

m is 0 or 1, n is 1 or 2, p is 0, 1 or 2 and q is 0, 1 or 2, the sum of p+q being 1 or 2.

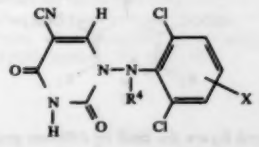
4,448,961

SUBSTITUTED ANILINO PYRIMIDINES

George R. Lindahl, III, Mountain View, and Clive A. Henrick, Palo Alto, both of Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

Division of Ser. No. 187,001, Sep. 14, 1980, abandoned. This application May 27, 1982, Ser. No. 382,526
Int. Cl.³ C07D 239/55
U.S. Cl. 544—311 3 Claims

1. A compound of the following formula:



wherein X is chloro and R^4 is hydrogen, methyl or hydroxymethyl.

4,448,962

SUBSTITUTED QUINOLINE CARBOXYLIC ACID DERIVATIVES

Tsutomu Irikura, Tokyo; Seigo Suzue, Saitama; Akira Ito, Saitama, and Hiroshi Koga, Saitama, all of Japan, assignors to Kyorin Seiyaku Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 80,519, Oct. 1, 1979, abandoned. This application Oct. 14, 1981, Ser. No. 311,343

Claims priority, application Japan, Sep. 29, 1978, 53-120216

Int. Cl.[3] **C07D** *401/02;* **A61K** *31/495*

U.S. Cl. 544—362 **3 Claims**

1. 1-Ethyl-1,4-dihydro-6-fluoro-7-(1-piperazinyl)-4-oxo-1,8-naphthyridine-3-carboxylic acid, the pharmacologically acceptable hydrates and acid addition salts thereof.

3. 1-Ethyl-7-(4-p-aminobenzyl-1-piperazinyl)-1,4-dihydro-6-fluoro-4-oxo-quinoline-3-carboxylic acid.

4,448,963

4-[4-(THIAZOLYL-AMINO)BENZYL]-2,3-DIOXOPIPERAZINE DERIVATIVES, ACID ADDITION SALTS THEREOF AND PROCESS FOR PRODUCING SAME

Takeko Hori, Toyama; Chosaku Yoshida, Takaoka; Yasuo Kiba, Toyama; Ryuko Takeno, Toyama; Joji Nakano, Toyama; Jun Nitta, Namekawa; Sumiko Kishimoto, Toyama; Shohachi Murakami, Toyama; Hisatsugu Tsuda, Toyama, and Isamu Saikawa, Toyama, all of Japan, assignors to Toyama Chemical Co., Ltd., Tokyo, Japan

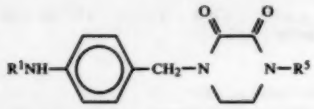
Division of Ser. No. 169,457, Jul. 16, 1980. This application Feb. 22, 1982, Ser. No. 351,257

Claims priority, application Japan, Jul. 24, 1979, 54-93234

Int. Cl.[3] **C07D** *241/06;* **A61K** *31/41*

U.S. Cl. 544—367 **2 Claims**

1. A compound represented by the formula



wherein R^1 represents 2-thiazolyl, 4-thiazolyl or 5-thiazolyl; R^5 represents C_{1-8} alkyl; or a pharmaceutically acceptable acid addition salt thereof.

4,448,964

1,4-DIHYDROPYRIDINE DERIVATIVES

Kenji Muto, Shizuoka; Minoru Watanabe, Tokyo; Takao Hatta, Machida; Toru Sugaya, Tokyo; Yoshinori Takemoto, Shizuoka, and Nobuhiro Nakamizo, Machida, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

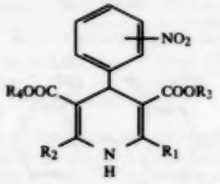
Filed Apr. 13, 1982, Ser. No. 367,995

Claims priority, application Japan, Apr. 17, 1981, 56-56937

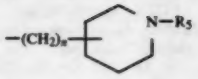
Int. Cl.[3] **C07D** *401/12*

U.S. Cl. 546—194 **10 Claims**

1. A 1,4-dihydropyridine compound of the formula:



wherein R_3 and R_2 are the same or different groups and each represents a lower alkyl group, one of R_3 and R_4 represents a lower alkyl group and the other represents a group of the formula:



wherein R_5 represents a benzyl group, a phenethyl group, an acetyl group or a benzoyl group and n represents 0 or an integer of 1–3; or a pharmaceutically acceptable acid addition salt thereof.

4,448,965

SUBSTITUTED CYCLOALKANEDIONES

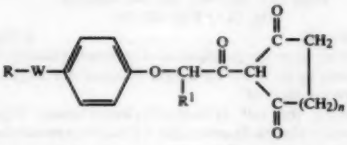
Clive A. Henrick, Palo Alto, Calif., assignor to Zoecon Corporation, Palo Alto, Calif.

Filed Aug. 16, 1982, Ser. No. 408,291

Int. Cl.[3] **C07D** *213/64, 213/74;* **A01N** *43/40*

U.S. Cl. 546—302 **5 Claims**

1. A compound of the following formula (A):

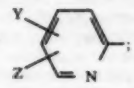


(A)

wherein,

n is zero, one, two or three;

R is



R^1 is hydrogen or lower alkyl;

W is oxygen, sulfur or amino; and

each of Y and Z is independently selected from hydrogen, lower haloalkyl and halogen.

4,448,966

SUBSTITUTED 2-PYRIDYLOXYPHENOXY-ALKANETRIONES

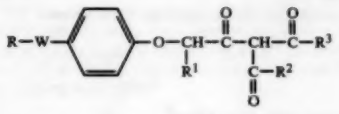
Shy-Fuh Lee, Sunnyvale, Calif., assignor to Zoecon Corporation, Del.

Filed Aug. 6, 1982, Ser. No. 405,852

Int. Cl.[3] **C07D** *213/64, 213/74;* **A01N** *43/40*

U.S. Cl. 546—302 **6 Claims**

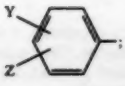
1. A compound of the following formula (A):



(A)

wherein,

R is



R^1 is hydrogen or lower alkyl;
R^2 is lower alkyl;
R^3 is lower alkyl;
W is oxygen, sulfur or amino; and
each of Y and Z is independently selected from hydrogen, lower alkyl, lower haloalkyl, lower alkoxy, lower haloalkoxy, halogen, and nitro.

4,448,967

PROCESS FOR PREPARING CHLORO-TRIFLUOROMETHYL PYRIDINES

Graham Whittaker, Cheshire, England, assignor to Imperial Chemical Industries PLC, London, England

Filed Aug. 20, 1982, Ser. No. 409,854

Claims priority, application United Kingdom, Sep. 3, 1981, 8126746

Int. Cl.³ C07D *213/26*

U.S. Cl. 546—345 **4 Claims**

1. A process for the production of at least one of the compounds 3-chloro-5-trifluoromethylpyridine and 2,3-dichloro-5-trifluoromethylpyridine which comprises reacting a substituted pyridine selected from the group consisting of 3-trifluoromethylpyridine and 2-chloro-5-trifluoromethylpyridine with at least one mole of chlorine per mole of substituted pyridine in the vapour phase at a temperature in the range from 250° C. to 450° C. in the presence of a catalyst comprising an oxide, chloride or fluoride of copper.

4,448,968

PROCESS FOR THE PREPARATION OF 1,3,4-THIADIAZOLONE DERIVATIVES

Haukur Kristinsson, Bottmingen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

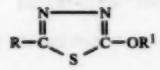
Filed Feb. 23, 1982, Ser. No. 351,095

Claims priority, application Switzerland, Feb. 27, 1981, 1336/81

Int. Cl.³ C07D *285/12*

U.S. Cl. 548—136 **3 Claims**

1. In the process in which a 2-alkoxy-1,3,4-thiadiazole of the formula



in which R^1 is alkyl of 2 to 4 carbon atoms and R is (a) hydrogen; (b) unsubstituted alkyl; (c) alkyl substituted with one or more substituents selected from the group consisting of halo, cyano, alkoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, alkylamino, alkoxycarbonyl, phenyl, phenoxy and phenylamino; (d) alkenyl; (e) phenylalkenyl; (f) cycloalkyl; (g) amino; (h) alkylamino; (i) dialkylamino; (j) alkoxycarbonyl; (k) alkylaminocarbonyl; (l) dialkylaminocarbonyl; (m) phenyl; or (n) a heterocyclic group selected from the group consisting of furyl, thienyl, pyrryl, isoxazolyl, oxazolyl, thiazolyl, isothiazolyl, pyridyl, pyrimidyl, benzofuryl, benzothienyl, indolyl, quinolyl and isoquinoline; is hydrolyzed to yield the corresponding 1,3,4-thiadiazol-2(3H)-one, the improvement which comprises treating said 2-alkoxy-1,3,4-thiadiazole with hydrogen chloride in non-aqueous organic solvent under nonaqueous conditions at a temperature of from 0° to 100° C.

4,448,969

CYCLIC ETHER OR CARBONATE ALKYLATION PRODUCTS OF 2,2,5,5-TETRAMETHYLIMIDAZOLIDIN-4-ONE AND DERIVATIVES, THEIR PREPARATION, AND THEIR USE AS STABILIZERS FOR SYNTHETIC POLYMERS

Chester E. Ramey, and Charles J. Rostek, Jr., both of Chagrin Falls, Ohio, assignors to Ferro Corporation, Cleveland, Ohio

Filed Apr. 23, 1982, Ser. No. 371,201

Int. Cl.³ C07D *233/00*

U.S. Cl. 548—301 **2 Claims**

1. A process for hydroxyalkylating a 2,2,5,5-tetra(lower alkyl) imidazolidin-4-one comprising
(a) reacting it with an aqueous sodium hydroxide solution,
(b) removing water present and water formed by the reaction, then
(c) bringing the reaction product into contact with molten ethylene carbonate, then
(d) adding water and heating at reflux, then
(e) drying and recovering the hydroxy alkylated product.

4,448,970

NARGENICIN DERIVATIVES

Barney J. Magerlein, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

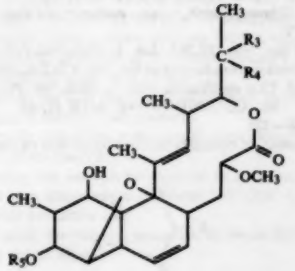
Continuation-in-part of Ser. No. 236,221, Feb. 19, 1981, abandoned. This application May 4, 1981, Ser. No. 259,999

The portion of the term of this patent subsequent to Dec. 14, 1999, has been disclaimed.

Int. Cl.³ C07D *233/54, 405/14*

U.S. Cl. 548—336 **8 Claims**

1. A compound of the formula



wherein

R_3 and R_4=one is hydrogen and the other is O-arylsulfonyl, wherein aryl can be phenyl or substituted phenyl wherein phenyl can have the substituents p-CH_3 or p-NO_2; O-alkylsulfonyl and substituted O-alkylsulfonyl wherein alkyl is C_1–C_8 inclusive wherein the additional substituent can be CH_3 or CF_3; halogen; azide; amine and substituted amine wherein the substituent can be alkyl of 1 to 3 carbon atoms, inclusive; S alkyl wherein alkyl is C_1–C_8, inclusive; S substituted alkyl wherein the substituent can be —CH_2CH_2OH; nitrile (CN); thio-ester;

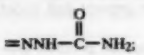
wherein alkyl is C_1–C_8, inclusive;

C—1'-imidazole;

S

O-alkyl wherein alkyl is C_1–C_8, inclusive;

R_3 and R_4 taken together are =O(ketone); =NOR$_8$, wherein R_8 is H, alkyl (C_1–C_8, inclusive), alkylidene and substituted alkylidene wherein the substituent can be alkyl of 0–8 carbons, inclusive; =CH—$COOC_2H_5$; =$CHOCH_3$;



=NNH—C—NH_2;

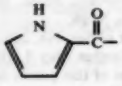
R_3 is OH and R_4 is

—C—R_9,

OH

wherein R_9 is $(CH_2)_nCH_3$ and n is an integer of from 0–8, inclusive;

R_5 is



H

N

O

C

4,448,971

HYPOGLYCEMIC 5-PHENYL-SUBSTITUTED OXAZOLIDINE-2,4-DIONES

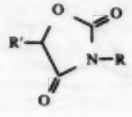
Rodney C. Schnur, Noank, Conn., assignor to Pfizer Inc., New York, N.Y.

Division of Ser. No. 222,202, Jan. 2, 1981, Pat. No. 4,367,234, which is a continuation-in-part of Ser. No. 173,206, Jul. 28, 1980, abandoned. This application Mar. 1, 1982, Ser. No. 353,776

Int. Cl.³ C07D *263/44*; A61K *31/42*

U.S. Cl. 548—226 **11 Claims**

1. A racemic or optically active compound of the formula



R'

O

O

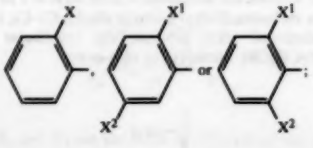
N—R

O

wherein

R is hydrogen, (C_1–C_4)-alkanoyl, benzoyl, (C_2–C_4)-carbalkoxy, (C_1–C_3)-alkylcarbamoyl, (C_5–C_7)-cycloalkylcarbamoyl or di(C_1–C_3)-alkylcarbamoyl;

R' is



X

X^1

X^1

or

;

X^2

X^2

X is acetamido or fluoro;

X^1 is (C_1–C_2) alkoxy; and

X^2 is hydrogen, chloro, bromo, fluoro, cyano or methyl;

or a pharmaceutically acceptable cationic salt thereof when R is hydrogen.

4,448,972

ADAMANTYL CONTAINING INTERMEDIATES

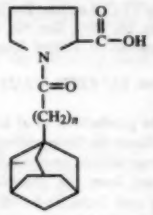
Francis R. Pfeiffer, Cinnaminson, N.J., assignor to SmithKline Beckman Corporation, Philadelphia, Pa.

Division of Ser. No. 350,975, Feb. 22, 1982, Pat. No. 4,387,049. This application Mar. 1, 1983, Ser. No. 471,112

Int. Cl.³ C07D *207/16*

U.S. Cl. 548—528 **2 Claims**

1. A chemical compound of the structural formula:



O

C—OH

N

C=O

$(CH_2)_n$

in which n is an integer of 1–3.

4,448,973

THERAPEUTICALLY ACTIVE 3-SUBSTITUTED AMINO-1-PHENYL AND SUBSTITUTED PHENYL-2-PYRAZOLINES

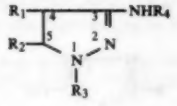
John P. Dusza, Nanuet, N.Y.; Joseph P. Joseph, Montvale, N.J., and Seymour Bernstein, New City, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 282,971, Jul. 13, 1981, abandoned. This application May 10, 1982, Ser. No. 376,885

Int. Cl.³ C07D *231/06*

U.S. Cl. 548—362 **4 Claims**

1. A compound selected from the group consisting of those of the formula:



R_1

4

3

NHR_4

R_2

5

2

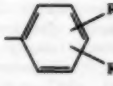
N

1

N

R_3

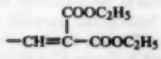
wherein R_1 and R_2 may be hydrogen or lower alkyl (C_1–C_4); R_3 is



R_5

R_6

where R_5 and R_6 may be hydrogen, chloro or fluoro; R_4 is CH_2CF_3 or



$COOC_2H_5$

—CH=C—$COOC_2H_5$

and the pharmacologically acceptable acid-addition salts thereof.

4,448,974

POLYALKYLENE SUCCINIMIDE LUBRICANT ADDITIVES

Joseph P. O'Brien, Kirkwood, and Andrew G. Papay, Manchester, both of Mo., assignors to Edwin Cooper, Inc., St. Louis, Mo.

Filed Mar. 24, 1982, Ser. No. 361,519
Int. Cl.³ C07D 207/412
U.S. Cl. 548—550 24 Claims

1. A lubricating oil additive having dispersant properties which is a product made by a process comprising the steps of (a) reacting 0.5–10 moles of an aliphatic aldehyde containing 1–20 carbon atoms with 1–2 moles of a saturated aliphatic amine having 2–50 carbon atoms and 2–11 amine nitrogen atoms, at least one of which is a primary amine group, at an elevated temperature high enough to distill out water and within the range of 70°–200° C. to form an intermediate and (b) reacting this intermediate at about 80°–200° C. with about 0.5–5 mole parts of an aliphatic hydrocarbon substituted succinic acid, anhydride or lower alkyl ester.

4,448,975

PROCESS FOR THE PREPARATION OF SUBSTITUTED AMIDINES

Victor Mark, Evansville, Ind., assignor to General Electric Company, Mt. Vernon, Ind.

Division of Ser. No. 106,677, Dec. 26, 1979, Pat. No. 4,353,830. This application Oct. 15, 1981, Ser. No. 311,675
Int. Cl.³ C07D 207/00; C07C 81/00
U.S. Cl. 548—558 10 Claims

1. In a process for producing substituted amidines which comprise reacting a substituted methylene ammonium halide with a primary or secondary amine or ammonia, the improvement comprising coreacting at least one mole of a base selected from the group consisting of

A. tertiary amines,
B. alkali or alkaline earth metal hydroxides,
C. the amidine itself that is the product of the reaction,
D. quaternary ammonium hydroxide, and
E. the primary amine reactant, the secondary amine reactant or ammonia reactant in excess over the stoichiometric quantities.

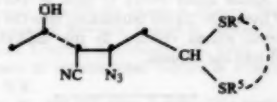
4,448,976

CHIRAL SYNTHESIS OF THIENAMYCIN FROM D-GLUOCOSE

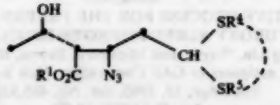
Philippe L. Durette, New Providence, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 248,177, Mar. 30, 1981, Pat. No. 4,384,998. This application Feb. 7, 1983, Ser. No. 464,185
Int. Cl.³ C07D 333/24
U.S. Cl. 549—39 3 Claims

1. A compound selected from the group consisting of



and



wherein: R^1 is lower alkyl having 1–6 carbon atoms; R^2 and R^3 are independently selected from hydrogen or triorganosilyl; and R^4 and R^5 are independently selected from alkyl having 1–6 carbon atoms and are joined as indicated by the dotted line.

4,448,977

STABILIZED ACETAL-ACID COMPOSITIONS

Glenn H. Warner, St. Albans; Louis F. Theiling, Jr., Charleston, both of W. Va., and Marvin G. Freid, Putnam Valley, N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 178,133, Aug. 14, 1980, abandoned, which is a continuation of Ser. No. 961,714, Nov. 17, 1978, Pat. No. 4,244,876. This application Aug. 26, 1982, Ser. No. 411,620
Int. Cl.³ C07D 309/06; C07C 41/46, 47/198
U.S. Cl. 549—201 9 Claims

1. A storage stable composition comprising (I) at least one member selected from the group consisting of 2-hydroxyalkoxy-6-alkoxytetrahydropyran, 5-hydroxyalkoxy-5-alkoxypentanal, 1-alkoxy-1,5,5-tri(hydroxyalkoxy)pentane, 2,6-dihydroxyalkoxy-tetrahydropyran, 5,5-dihydroxyalkoxypentanal, and 1,1,5,5-tetra(hydroxyalkoxy)pentane, or mixtures thereof and (II) from 0.25 to 2.5 weight percent, based on the weight of component (I), of a soluble organic acid, wherein said alkoxy moieties contain from 1 to 3 carbon atoms.

4,448,978

PROCESS FOR PREPARING MALEIC ANHYDRIDE

Ramon A. Mount, and James T. Wrobleski, both of St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 223,659, Jan. 9, 1981, abandoned. This application Mar. 8, 1982, Ser. No. 355,936
Int. Cl.³ C07D 307/60
U.S. Cl. 549—259 6 Claims

1. A method for the preparation of maleic anhydride from butane comprising reacting an oxygen-containing gas and butane at a temperature between about 350° and 600° C. in the presence of the product of the process comprising:

(1) forming a first reaction product from a vanadium compound and a phosphorus compound having a phosphorus-to-vanadium atom ratio of 0.8–1.5:1
(2) reacting the first reaction product with hydrogen iodide to form a catalyst intermediate;
(3) partially dehydrating the catalyst intermediate to yield an amorphous material;
(4) heating the amorphous material in an aqueous environment at a temperature of about 120°–250° C. to form a catalyst precursor and
(5) calcining the catalyst precursor at about 300°–600° C. to form the catalyst.

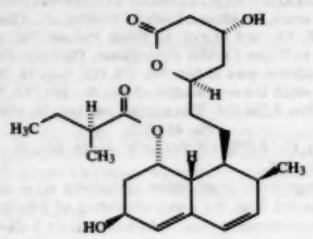
4,448,979

ML-236B DERIVATIVES

Akira Terahara, and Minoru Tanaka, both of Hiromachi, Japan, assignors to Sankyo Company, Limited, Tokyo, Japan

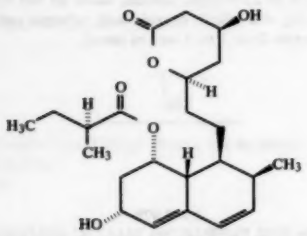
Division of Ser. No. 270,846, Jun. 5, 1981, Pat. No. 4,346,227. This application Feb. 24, 1982, Ser. No. 351,975
Claims priority, application Japan, Jun. 6, 1980, 55-76127; Aug. 22, 1980, 55-115483; Sep. 8, 1980, 55-124385; Sep. 19, 1980, 55-130311
Int. Cl.³ C07D 309/30
U.S. Cl. 549—292 3 Claims

1. The compound having the formula (V):



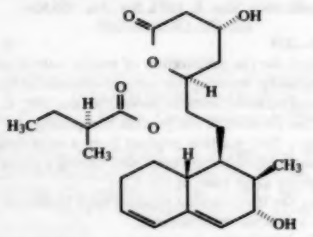
(V)

2. The compound having the formula (VII):



(VII)

3. The compound having the formula (XIII):



(XIII)

4,448,980

PREPARATION OF TRIALKYLSILYL ETHERS

Dotsevi Y. Sogah, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 22, 1983, Ser. No. 534,778
Int. Cl.³ C07F 7/18, 7/08, 7/10
U.S. Cl. 556—446 21 Claims

1. Process comprising contacting and reacting $(R)_3SiZ$ and $R^1—C(O)—R^2$ wherein

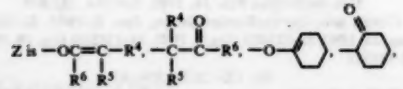
R is C_{1-4} alkyl;

R^1 is C_{1-10} alkyl or C_{6-10} cycloalkyl, aryl, alkaryl or aralkyl;

R^2 is —H, C_{1-10} alkyl or C_{6-10} cycloalkyl, aryl, alkaryl, aralkyl or $—OR^3$;

R^3 is $—Si(R)_3$ or C_{1-4} alkyl, optionally substituted with $—Si(R)_3$ or $—OSi(R)_3$;

R^1 and R^2 taken together are $—CH_2—_5$; and



—H, —CN, $—N_3$, —Sr, $—OP(OR^3)_2$, $—OP[N(R)_2]_2$,

$—CH_2CH=C(R^5)—R^4$,

$—CH_2CN$ or $—C_6F_5$;

R^4 and R^5 are independently selected from —H and C_{1-4} alkyl;

R^6 is —H, C_{1-6} alkyl, aryl or $—OR^7$; and

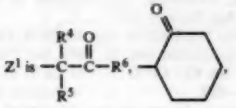
R^7 is $—Si(R)_3$ or C_{1-4} alkyl, optionally substituted with $—Si(R)_3$ or $—OSi(R)_3$,

in the presence of a catalytic amount of bifluoride ($HF_2^{\ominus}$) catalyst to produce the trialkylsilyl ether

wherein

X is $—Si(R)_3$;

R, R^1 and R^2 are as defined above; and



—H, —CN, $—N_3$, —SR, $—OP(OR^3)_2$, $—OP[N(R)_2]_2$,

$—CH_2CH=C(R^5)—R^4$,

$—CH_2CN$ or $—C_6F_5$.

4,448,981

METHOD OF MAKING ORGANOSILOXANES AND ALKYL HALIDES FROM DIALKYLDIALKOXYSILANES

Luisito A. Tolentino, Ballston Lake, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed May 13, 1983, Ser. No. 494,191
Int. Cl.³ C07F 7/08
U.S. Cl. 556—459 25 Claims

1. An improved process for making an alkyl halide and organosiloxanes from a dialkyldialkoxysilane and a hydrogen halide, comprising, simultaneously introducing the dialkyldialkoxysilane and hydrogen halide into a column containing hydrogen halide under reflux in such proportions that the amount of hydrogen halide introduced into the column is at a stoichiometric excess relative to the dialkyldialkoxysilane introduced into the column.

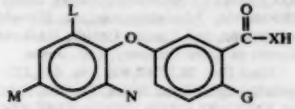
4,448,982

SELECTIVE PROCESS FOR THE PREPARATION OF HYDROXY ALKYL PHENOXY BENZOATES

Kou-Chang Liu, Wayne, and Michael J. Brown, Randolph, both of N.J., assignors to GAF Corporation, New York, N.Y.

Filed Apr. 15, 1983, Ser. No. 485,539
Int. Cl.³ C07C 69/76
U.S. Cl. 560—21 8 Claims

1. The process which comprises reacting an ethylene or propylene carbonate with a phenoxy benzoic acid having the formula



wherein X is O or S; G is selected from the group of nitro, halo, cyano or a hydrogen atom; L, M and N are independently selected from the group of halo, trihaloalkyl, lower alkyl, lower alkoxy or a hydrogen atom, in the presence of a catalyst at a temperature of between about 90° C. and 125° C. to produce the corresponding hydroxyalkyl phenoxybenzoate in a substantially pure state.

4,448,983

PREPARATION OF ALKYL CARBOXYLATES

Lewis B. Young, Skillman, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

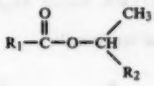
Continuation-in-part of Ser. No. 218,148, Dec. 19, 1980, Pat. No. 4,365,084. This application Sep. 30, 1982, Ser. No. 429,936

The portion of the term of this patent subsequent to Dec. 21, 1999, has been disclaimed.

Int. Cl.³ C07C *67/04*

U.S. Cl. 560—241.1 **9 Claims**

1. A process for the preparation of alkyl-carboxylate mixtures enriched in alpha-methylalkyl carboxylates having the formula:



wherein:

R_1 is alkyl of 1 to 10 carbon atoms and R_2 is C_4 to C_{18} alkyl; said process comprising:

reacting an olefin mixture containing at least 25 percent of a C_6 to C_{20} olefin having no unsaturation at the site of the No. 2 carbon atom thereof, with a C_1 to C_{10} carboxylic acid, said reaction being carried out under ester-forming reaction conditions including the presence of a catalyst comprising crystalline zeolite material having a silica to alumina mole ratio of at least 12 and a Constraint Index of from about 1 to 12, to thereby selectively produce an alkyl carboxylate ester product which is enriched in the alpha-methylalkyl carboxylate ester.

4,448,984

MONO-OXOMETHYL SUBSTITUTED POLYHYDRODIMETHANONAPHTHALENE DERIVATIVES

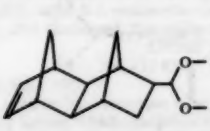
Mark A. Sprecker, Sea Bright; Marie R. Hanna, Hazlet; Richard J. Tokarzewski, Keyport; Robert P. Belko, Woodbridge; Hugh Watkins, Lincroft, and Manfred H. Vock, Locust, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 354,387, Mar. 2, 1982. This application Jan. 18, 1983, Ser. No. 458,890

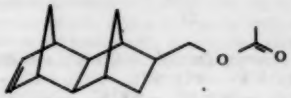
Int. Cl.³ C07C *43/162, 67/035, 67/04, 35/28*

U.S. Cl. 560—256 **3 Claims**

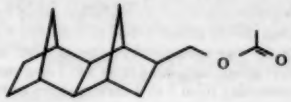
1. The compound having the structure:



2. The compound having the structure:



3. The compound having the structure:



4,448,985

OXIDATION OF ISOBUTYRIC ACID TO ALPHA-HYDROXYISOBUTYRIC ACID

John A. Sofranko, West Chester, and John J. Leonard, Springfield, both of Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 13, 1982, Ser. No. 449,301

Int. Cl.³ C07C *59/00*

U.S. Cl. 562—579 **8 Claims**

1. A process for the preparation of α-hydroxyisobutyric acid which comprises heating at temperatures of from about 50° C. to 200° C. a mixture containing stoichiometric quantities of isobutyric acid, water and a TlX_3 salt selected from the group consisting of thallic chloride, thallic bromide, thallic nitrate, thallic oxide, thallic sulfate, thallium (III) trifluoroacetate and thallium (III) benzoate.

4,448,986

PREPARATION OF (1R,CIS)-OXYIMINO-SUBSTITUTED CYCLOPROPANECARBOXYLIC ACIDS

Steven A. Roman, Fulshear, Tex., assignor to Shell Oil Company, Houston, Tex.

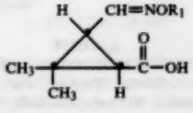
Division of Ser. No. 292,567, Aug. 13, 1981, Pat. No. 4,409,398. This application Jul. 14, 1982, Ser. No. 398,032

Int. Cl.³ C07C *131/02*

U.S. Cl. 562—506 **8 Claims**

1. A process for the preparation of (1R,4R,5S)-4-acetoxy-6,6-dimethyl-3-oxabicyclo[3.1.0]hexan-2-one which comprises treating (1R,cis)-caronaldehydic acid with acetic anhydride.

4. A process for the preparation of a (1R,cis)-oxyimino-substituted cyclopropanecarboxylic acid of the formula



wherein R_1 represents a hydrogen atom; an alkyl group containing from 1 to 10 carbon atoms optionally substituted by one or more halogen atoms; a (cycloalkyl)alkyl group containing from 3 to 7 carbon atoms, a total of from 4 to 9 carbon atoms and optionally ring-substituted by one or more halogen atoms; a cycloalkyl group containing from 3 to 7 ring carbon atoms; an alkenyl group containing from 2 to 4 carbon atoms optionally substituted by one or more halogen atoms; an alkynyl group containing from 2 to 4 carbon atoms; an aryl group containing from 6 to 12 carbon atoms; an aralkyl group containing from 7 to 10 carbon atoms, each optionally ring-substituted by one or more halogen atoms; or a group

wherein X is thienyl, furfuryl, $-CO_2R^1$, $-CONR^1R^2$, $-SO_3R^1$, $-SO_2NR^1R^2$, $-PO(OR^1)_2$, $-NO_2$, $-CN$, $-OR^1$, $-SR^1$, $-S(O)_{R1}$, $-S(O)_2R^1$, $-NR^1R^2$, $-N(O)R^1R^2$ or $-(OCH_2CH_2)q-OR^1$ in which q is an integer of 1 to 4, R^1 and R^2 each independently is a hydrogen atom, an alkyl group containing from 1 to 8 carbon atoms optionally substituted by one or more halogen atoms, a (cycloalkyl)alkyl group containing from 3 to 7 ring carbon atoms, a total of from 4 to 9 carbon atoms and optionally ring-substituted by one or more halogen atoms, a cycloalkyl group containing from 3 to 7 ring atoms, an alkenyl group containing from 3 to 4 carbon atoms optionally substituted by one or more halogen atoms, an alkynyl group containing from 3 to 4 carbon atoms or an aryl group containing from 6 to 12 carbon atoms or an aralkyl group containing from 7 to 10 carbon atoms, each optionally ring-substituted by one or more halogen atoms, or R^1 and R^2 taken together is an alkylene or oxaalkylene group containing from 4 to 6 carbon atoms, or when one R^1 or R^2 is furfuryl or thienyl then the other is a hydrogen atom; p is an integer of 1 or 2; when p is 1 then X^1 is an alkyl group containing from 1 to 4 carbon atoms or when p is 2 then X^1 is a hydrogen atom, which process comprises treating (1R,cis)-caronaldehydic acid with acetic anhydride and treating the resulting (1R,4R,5S)-4-acetoxy-6,6-dimethyl-3-oxabicyclo[3.1.]-hexan-2-one with an acid addition salt of the corresponding hydroxylamine or optionally substituted hydrocarbyloxyamine in the presence of a base.

4,448,987

CATALYZED HYDROGENATION OF TEREPHTHALIC ACID TO P-HYDROXYMETHYLBENZOIC ACID USING A RHENIUM CATALYST

Lawrence D. Lillwitz, Glen Ellyn, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Nov. 30, 1982, Ser. No. 445,547

Int. Cl.³ C07C *65/04*

U.S. Cl. 562—473 **13 Claims**

1. A process for preparing a hydroxymethyl aryl monocarboxylic acid from an arylene dicarboxylic acid which comprises hydrogenating an aqueous solution of an arylene dicarboxylic acid compound in the presence of a rhenium oxide catalyst at a temperature within the range of from about 140° C. to about 200° C.

4,448,988

2-KETOSULFONAMIDES

Dieter Günther, Kelkheim (Taunus), Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

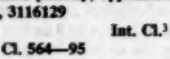
Filed Apr. 21, 1982, Ser. No. 370,504

Claims priority, application Fed. Rep. of Germany, Apr. 23, 1981, 3116129

Int. Cl.³ C07C *143/74*

U.S. Cl. 564—95 **1 Claim**

1. A 2-ketosulfonamide of the formula



in which R is alkyl having 1 to 4 carbon atoms.

4,448,989

N-NITROXYALKYLENE BENZAMIDE DERIVATIVES

Masami Shiratsuchi, Musashimurayama; Hiroshi Ishihama, Higashimurayama, and Yasumi Uchida, Ichikawa, all of Japan, assignors to Kowa Company, Ltd., Japan

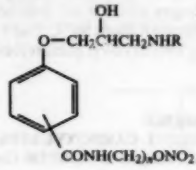
Filed Dec. 20, 1982, Ser. No. 451,322

Claims priority, application Japan, Dec. 24, 1981, 56-208105

Int. Cl.³ C07C *103/76, 103/78;* A61K *31/165*

U.S. Cl. 564—165 **4 Claims**

1. A compound represented by the following formula



wherein R represents a lower alkyl group having 2 to 6 carbon atoms, and n is an integer of from 1 to 5.

4,448,990

HYDROXYAMINOTETRALINCARBOXAMIDES

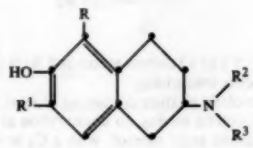
Nicholas J. Bach; Edmund C. Kornfeld, and Robert D. Titus, all of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Nov. 16, 1982, Ser. No. 442,074

Int. Cl.³ C07C *103/28;* A61K *31/165*

U.S. Cl. 564—167 **10 Claims**

1. A compound of the formula



wherein one of R and R^1 is H and the other is $CONH_2$, R^2 and R^3 are individually H, methyl, ethyl or n-propyl, and pharmaceutically-acceptable acid addition salts thereof formed with non-toxic acids.

4,448,991

CYCLOHEXENE DERIVATIVES

Hans Bruderer, Benken; Albert E. Fischli, Rieben, and Rudolf Pfister, Basel, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

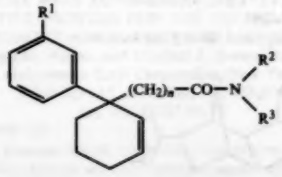
Division of Ser. No. 228,793, Jan. 27, 1981, Pat. No. 4,336,268. This application Mar. 24, 1982, Ser. No. 361,290

Claims priority, application Switzerland, Jan. 29, 1980, 724/80

Int. Cl.³ C07C *103/19, 103/76*

U.S. Cl. 564—171 **2 Claims**

1. A compound of the formula



IV

wherein R^1 is hydroxy or lower alkoxy, n is the integer 1 or 2, R^2 is lower alkyl and R^3 is hydrogen, lower alkyl, lower alkenyl or lower cycloalkylmethyl.

4,448,992

ADDITION PRODUCTS FROM TRIETHANOLAMINE CONDENSATION PRODUCTS AND BISGLYCIDYL ETHERS AND THEIR USE

Helmut Diery, Kelkheim, Fed. Rep. of Germany, and Bernhard Mees, Charlotte, N.C., assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

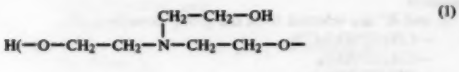
Filed Sep. 9, 1982, Ser. No. 416,117

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1981, 3136281

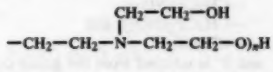
Int. Cl.³ C07C *91/08, 33/08*

U.S. Cl. 564—347 **2 Claims**

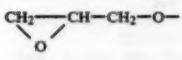
1. An addition product obtained by reaction of a triethanolamine condensation product of the formula 1,



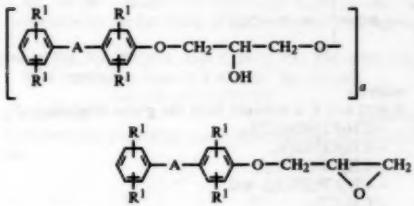
(1)



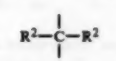
wherein n denotes a number from 1 to 3, with a bisglycidyl ether of the formula 2,



(2)



wherein R^1 can be identical or different and denote hydrogen, C_1–C_4-alkyl or halogen, A denotes a direct bond, a sulfonyl or cyclohexyl group or a group of the formula



R^2 denotes hydrogen, methyl or phenyl and a denotes a whole number from 0 to 10.

4,448,993

PROCESS FOR CONVERSION OF HYDROXYBENZENES TO AMINES

Lynn H. Slaugh, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 219,279, Dec. 22, 1980, Pat. No. 4,335,022, which is a continuation-in-part of Ser. No. 61,205, Jul. 27, 1979, abandoned. This application Mar. 5, 1982, Ser. No. 355,010

Int. Cl.³ C07C *85/06*

U.S. Cl. 564—402 **15 Claims**

1. A process for conversion of arylhydroxides to the corresponding amines which comprises contacting the arylhydroxide and ammonia at about 250° C. to about 550° C. with a catalyst prepared by a process which comprises impregnating a substantially dehydrated amorphorous silica gel with aluminum hydride dissolved in an anhydrous, non-hydroxyl containing organic solvent, drying the impregnated silica to remove the solvent and subsequently heating the impregnated silica at a temperature of about 300° to about 900° C. in a non-oxidizing atmosphere.

4,448,994

REDUCTION OF C-NITROSOARYLAMINES

Paul R. Kurek, Schaumburg, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Sep. 16, 1983, Ser. No. 533,071

Int. Cl.³ C07C *85/11*

U.S. Cl. 564—416 **8 Claims**

1. A method of making an aminoarylamine comprising contacting an aqueous basic solution of an alkali metal salt of a C-nitrosoarylamine with a reducing sugar at a temperature from about 40° C. to about 110° C., and recovering the aminoarylamine formed thereby.

4,448,995

CATALYTIC HYDROGENATION OF DI(4-AMINOPHENYL)METHANE

Gary F. Allen, New Martinsville, W. Va., assignor to Mobay Chemical Corporation, Pittsburgh, Pa.

Filed Dec. 13, 1982, Ser. No. 449,341

Int. Cl.³ C07C *85/24*

U.S. Cl. 564—451 **10 Claims**

1. A process for the catalytic hydrogenation of di(4-aminophenyl)methane to a liquid di(4-aminocyclohexyl)methane containing from 15 to 40% by weight of the trans,trans isomer comprising hydrogenating di(4-aminophenyl)methane at a hydrogen pressure of at least 500 psi and at a temperature of from 100° to 300° C., in the presence of a ruthenium catalyst supported on an inert carrier, said catalyst being moderated with from 65 to 700% by weight, based on the weight of the ruthenium of a compound selected from the group consisting of nitrates and sulfates of alkali metals and alkaline earth metals.

4,448,996

PROCESS FOR PREPARING TERTIARY AMINES

Yoshio Yanagi; Kunikazu Yoneyama, and Hiroyuki Omori, all of Yokkaichi, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Mie, Japan

Filed Dec. 15, 1982, Ser. No. 449,859

Claims priority, application Japan, Dec. 15, 1981, 56-201986; Apr. 19, 1982, 57-65067

Int. Cl.³ C07C *85/00*

U.S. Cl. 564—467 **14 Claims**

1. In a process for the preparation of a tertiary amine having at least one long-chain alkyl group by the catalytic reaction of a long-chain olefin containing 8 to 30 carbon atoms, carbon monoxide, hydrogen, and a primary or secondary amine in the presence of a rhodium-based catalyst and/or a ruthenium-based catalyst, the improvement which comprises:

conducting said reaction in a solvent of an alcohol selected from the group consisting of monohydric alcohols containing 1 to 3 carbon atoms, dihydric alcohols containing 2 to 6 carbon atoms, trihydric alcohols containing 3 to 6 carbon atoms, intermolecular dehydrated condensates of dihydric or trihydric alcohols containing 2 to 3 carbon atoms and mixtures of said alcohol and water; and

allowing the reaction solution to separate into an amine phase containing the product tertiary amine and a solvent phase containing the catalyst.

4,448,997

PREPARATION OF LINEAR POLYETHYLENEPOLYAMINES WITH AN ALUMINUM PHOSPHATE CATALYST

Michael E. Brennan, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.

Continuation-in-part of Ser. No. 283,713, Jul. 16, 1981, abandoned. This application Dec. 27, 1982, Ser. No. 453,841

Int. Cl.³ C07C *85/06*

U.S. Cl. 564—479 **8 Claims**

1. A method of preparing linear polyethylenepolyamines from ethylenediamine and monoethanolamine which comprises:

mixing and reacting ethylenediamine with monoethanolamine at a temperature of about 200° to about 400° C. and a pressure of about 700 to about 1400 psig in the presence of a catalytically effective amount of an aluminum phosphate catalyst;

said catalyst prepared by mixing and reacting alumina with phosphoric acid, adding water to the reaction mixture, adding ammonium hydroxide to form a precipitate, continuing the addition of ammonium hydroxide until precipitate formation ceases, and separating the precipitate catalyst from the reaction mixture; and

recovering a polyethylenepolyamine product characterized by a relatively large percentage of linear, non-cyclic polyethylenepolyamines.

4,448,998

CATALYTIC HYDROGENATION OF N,N-DISUBSTITUTED AMIDES TO AMINES

Richard M. King, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Nov. 22, 1982, Ser. No. 443,426

Int. Cl.³ C07C *85/12*

U.S. Cl. 564—488 **12 Claims**

1. A process for producing tertiary amines containing from about 10 to about 72 carbon atoms by hydrogenation of the corresponding N,N-disubstituted amides, the said process being conducted with gaseous hydrogen at a temperature of from about 200° C. to about 400° C. and a pressure of from about 140 to about 350 kg./sq.cm., and in the presence of a catalyst composition comprising copper chromite and zeolite, the weight ratio of copper chromite:zeolite being from about 10:1 to about 0.1:1.

4,448,999

PROCESS FOR THE PREPARATION OF 2-AMINOPROPANEDIOL-1,3(SERINOL)

Klaus Thewalt, Witten; Gunter Bison, Troisdorf-Sieglar, both of Fed. Rep. of Germany, and Heinz Egger, Muttenz, Switzerland, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Jul. 30, 1982, Ser. No. 403,326

Claims priority, application Fed. Rep. of Germany, Jul. 30, 1981, 3130082

Int. Cl.³ C07C *85/11*

U.S. Cl. 564—495 **7 Claims**

1. A process for the preparation of 2-aminopropanediol-1,3 which comprises effecting catalytic hydrogenation of an alkali salt of 2-nitro-1,3-propanediol in the presence of inert solvents and a buffered acid at elevated temperatures and under pressures of 1–98 bar hydrogen in a batch reactor and maintaining a narrow range of temperatures extending from 50° to 80° C. during the reaction by controlled cooling of the reactant medium with a cooling device.

4,449,000

1:1:2 AND 1:3 MIXED POLYNITROETHYL ORTHOCARBONATES VIA MIXED TRIALKOXYMETHYL TRICHLOROMETHYL DISULFIDES

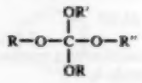
Michael E. Sitzmann, Adelphi, and William H. Gilligan, Fort Washington, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 18, 1983, Ser. No. 467,714

Int. Cl.³ C07C *79/343, 76/02*

U.S. Cl. 568—22 **21 Claims**

1. A 1:1:2 mixed orthocarbonate of the formula



wherein

R and R″ are selected from the group consisting of

$-CH_2C(NO_2)_2CH_3$,

$-CH_2C(NO_2)_3$,

$-CH_2CF(NO_2)_2$,

$-CH_2CF_2(NO_2)$, and

$-CH_2CF_3$,

and R′ is selected from the group consisting of

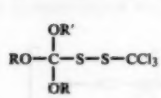
$CH_2CF(NO_2)_2$,

$CH_3CF_2(NO_2)$, and

CH_2CF_3,

provided that R≠R′, R≠R″, and R′≠R″.

11. A disulfide of the formula



wherein

R≠R′ and R is selected from the group consisting of

$-CH_2C(NO_2)_2CH_3$,

$-CH_2C(NO_2)_3$,

$-CH_2CF(NO_2)_2$,

$-CH_2CF_2(NO_2)$, and

$-CH_2CF_3$,

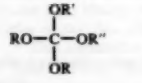
and R′ is selected from the group consisting of

$CH_2CF(NO_2)_2$,

$CH_2CF_2(NO_2)$, and

CH_2CF_3.

16. A process for preparing 1:1:2 mixed orthocarbonates of the formula



comprising the following steps in order:

(1) reacting a

(a) a thionocarbonate of formula

$(RO)_2C{=}S$ with

(b) an alcohol of the formula R′OH and

(c) $ClSCCl_3$,

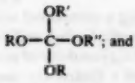
in an 1:1:1 molar ratio in the presence of a hydroxyl ion source to produce a disulfide of the formula

$(RO)_2(R'O)CSSCCl_3$;

(2) reacting the disulfide produced in step (1) with chlorine gas to produce a chloroorthoformate of the formula

$(RO)_2(R'O)CCl$;

(3) reacting the chloroorthoformate produced in step (2) with an alcohol of the formula R"OH to produce the desired orthocarbonate of the formula



(4) isolating the product orthocarbonate;
wherein
R and R" are selected from the group consisting of
$-CH_2C(NO_2)_2CH_3$,
$-CH_2C(NO_2)_3$,
$-CH_2CF(NO_2)_2$,
$-CH_2CF_2(NO_2)$, and
$-CH_2CF_3$,
and R' is selected from the group consisting of
$CH_2CF(NO_2)_2$,
$CH_2CF_2(NO_2)$, and
CH_2CF_3,
provided that R≠R', R≠R", and R'≠R".

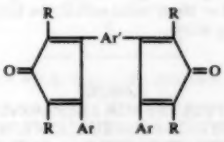
4,449,001

OXY AND THIOARYL-PHENYLATED AROMATIC BISCYCLOPENTADIENONES

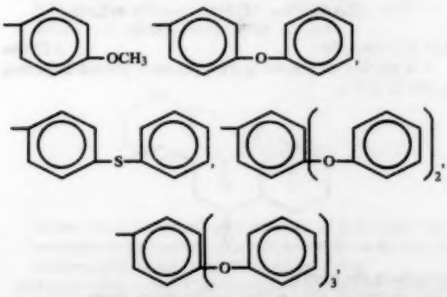
Bruce A. Reinhardt, New Carlisle, and Fred E. Arnold, Centerville, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Division of Ser. No. 366,733, Apr. 8, 1982, Pat. No. 4,400,540. This application Mar. 8, 1983, Ser. No. 473,391
Int. Cl.³ C07C *49/792*
U.S. Cl. 568—31 **3 Claims**

1. A process for preparing a compound having the general formula



wherein Ar is a monovalent aromatic radical selected from the group consisting of



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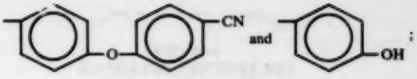
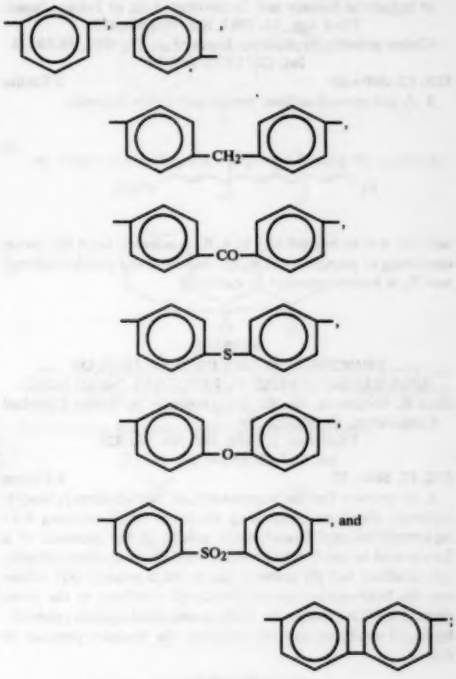
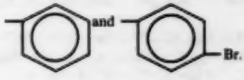


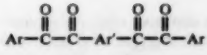
Ar' is a divalent aromatic radical selected from the group consisting of



and R is a monovalent aromatic radical selected from the group consisting of



which comprises reacting an aromatic bis-benzil having the general formula



wherein Ar and Ar' are as described above, with a benzylketone having the general formula

wherein R is as described above, in the presence of an

alkali metal hydroxide under reflux reaction conditions in an alcohol reaction medium.

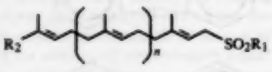
4,449,002

POLYPRENYL SULFONES

Akio Sato; Kenji Nakajima, both of Ibaragi; Yoshimasa Takahara, Narashino; Shizumasa Kijima, Niiza; Hideaki Watanabe, Kisogawamachi; Tamio Kawamura, Kakamigahara, and Yasushi Nagai, Tokyo, all of Japan, assignors to Eisai Co., Ltd. and General Director of the Agency of Industrial Science and Technology, both of Tokyo, Japan

Filed Apr. 14, 1982, Ser. No. 368,475
Claims priority, application Japan, Apr. 17, 1981, 56-58223
Int. Cl.³ C07C *147/08*
U.S. Cl. 568—28 2 Claims

1. A polyprenyl sulfone compound of the formula:



(I)

wherein n is an integer of 1 to 4, R_1 is selected from the group consisting of phenyl, tolyl, xylyl, naphthyl and p-chlorophenyl and R_2 is hydroxymethyl or carboxyl.

4,449,003

PROCESS FOR THE PRODUCTION OF BIS(4-HYDROXYPHENYL)BIPHENYL DISULFONE

John R. Sanderson, Austin, Tex., assignor to Mobay Chemical Corporation, Pittsburgh, Pa.

Filed Apr. 2, 1982, Ser. No. 364,828
Int. Cl.³ C07D *147/06, 147/10*
U.S. Cl. 568—33 6 Claims

1. A process for the preparation of bis(4-hydroxyphenyl)-biphenyl disulfone comprising the steps of (i) reacting 4,4'-biphenyldisulfonylchloride with anisole in the presence of a Lewis acid as catalyst to produce bis(4-methoxyphenyl)biphenyl disulfone and (ii) isolating the reaction product (iii) refluxing the bis(4-methoxyphenyl)biphenyl disulfone in the presence of a lithium halide to produce said bis(4-hydroxyphenyl)-biphenyl disulfone and (iv) isolating the reaction product of (iii).

4,449,004

PROCESS FOR PREPARING ORGANIC SULPHIDES

Iacopo Degani; Rita Fochi, and Valeria Regondi, all of Turin, Italy, assignors to Consiglio Nazionale Delle Ricerche, Rome, Italy

Filed Apr. 13, 1982, Ser. No. 368,293
Claims priority, application Italy, Apr. 17, 1981, 21263 A/81
Int. Cl.³ C07C *148/00*
U.S. Cl. 568—38 7 Claims

1. A process for preparing organic sulphides of formula:

$$R—S—R_1$$

in which: R is an aliphatic, aryl, arylaliphatic or heterocyclic radical, and R_1 is an aliphatic or arylaliphatic radical, characterized by reacting organic dithiocarbonates with an alkylating or arylating agent in the presence of an aqueous alkaline base and a phase transfer catalyst, at a temperature of about 50° to 100° C., in accordance with the equation:

$$2R—X+(R_1S)_2CO+H_2O \rightarrow 2R—S—R_1+2HX+CO_2 \quad (I)$$

in which R and R_1 are as heretofore defined, and X is Cl, Br, I, $—SO_3CH_3$, or $—SO_3—C_6—H_4—CH_3$.

4,449,005

DEHYDROHALOGENATION PROCESS

George T. Davis, deceased, late of Bel Air, Md. (by Maureen A. Davis, administratrix), and William R. Hydro, Bel Air, Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 6, 1982, Ser. No. 405,680
Int. Cl.³ C07C *149/10*
U.S. Cl. 568—59 8 Claims

1. A process for dehydrochlorinating a compound selected from the group consisting of 2-chloroethyl ethyl sulfide and bis(2-chloroethyl)sulfide, which consists essentially of contacting said compound in vapor phase with a quaternary ammonium—or quaternary phosphonium fluoride of the formula $(R)_4$ X F, wherein the R's represent the same or different alkyl radicals containing 1–12 carbon atoms or phenyl, X is nitrogen or phosphorus and F is fluorine, in the absence of a solvent at a temperature and for a period of time sufficient to effect the dehydrochlorination to the corresponding vinyl compound.

4,449,006

PREPARATION OF METHYL MERCAPTAN FROM CARBON OXIDES

Paul G. Haines, Lafayette Hill, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Sep. 29, 1982, Ser. No. 431,858
Int. Cl.³ C07C *148/00*
U.S. Cl. 568—70 8 Claims

1. A continuous process for the manufacture of methyl mercaptan comprising contacting an intimate mixture of carbon oxide, sulfur or hydrogen sulfide, and hydrogen at elevated temperature and pressure with a single-phase, solid catalyst system comprising from about 10 to about 90%, based on the weight of said system of a porous support comprising alumina upon which is deposited from about 90 to 10%, based on the weight of the system, of a mixture of:

(a) from about 2 to about 95%, based on the weight of said mixture, of the sulfide of manganese,

(b) from 0 to about 90%, based on the weight of the mixture, of at least one sulfide selected from the group consisting of sulfides of iron, nickel, zinc, chromium, cobalt and molybdenum, and

(c) from about 5 to about 80%, based on the weight of said mixture, of an alkali metal sulfide, the total of (a), (b) and (c) equaling 100%.

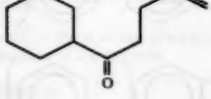
4,449,007

PROCESS FOR PREPARING 1(4-PENTONOYL)-3,3-DIMETHYLCYCLOHEXANE AND INTERMEDIATES USED IN A SAID PROCESS

John B. Hall, Rumson, and Mark A. Sprecker, Sea Bright, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Continuation-in-part of Ser. No. 375,767, May 6, 1982. This application Nov. 12, 1982, Ser. No. 441,221
Int. Cl.³ C07C *45/67, 49/303*
U.S. Cl. 568—343 2 Claims

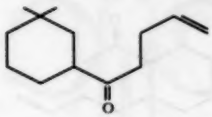
1. A process for preparing the compound defined according to the structure:



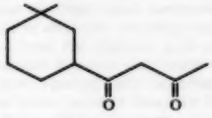
comprising the steps of:

(i) reacting an alkyl acetate having the structure:

with 1-acetyl-3,3-dimethylcyclohexane having the structure;

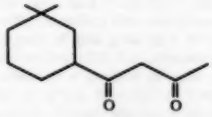


wherein R_2 is C_1–C_5 alkyl thereby forming a diketone having the structure:



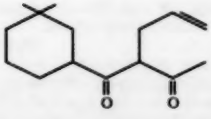
at a temperature of from about 20° C. up to about 50° C. and a pressure of from about 0.7 atmospheres up to about 5 atmospheres in the presence of an alkali metal alkoxide catalyst or aluminum isopropylate catalyst, the mole ratio of said 1-acetyl-3,3-dimethylcyclohexane:alkyl acetate being between 1:1 and 1:2 and the mole ratio of alkali metal alkoxide or aluminum triisopropylate:1-acetyl-3,3-dimethylcylcohexane being between 0.5:1 and 1:0.5;

(ii) reacting the diketone having the structure:



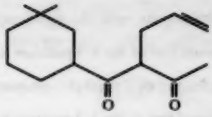
with the allyl halide having the structure:

wherein X is bromo or iodo therby forming the compound defined according to the structure:

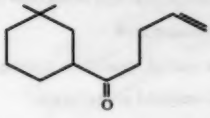


under reflux conditions at a pressure of from about 0.7 atmospheres up to about 10 atmospheres, the mole ratio of diketone:allyl halide being from 1:1 up to 1:2;

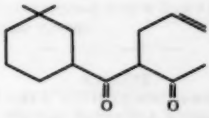
(iii) performing a retro-Claisen reaction on the allyl diketone having the structure:



in order to form the compound having the structure:

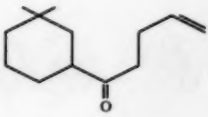


by means of reacting the compound having the structure:



with an alkali metal alkoxide or aluminum triisopropylate or in an aqueous alcoholic solution at a temperature of between 35° C. and 50° C.; and

(iv) isolating the compound having the structure:



from the reaction mass.

4,449,008

SUBSTITUTED METHYL ISOPROPYL CYCLOHEXENONES, ORGANOLEPTIC USES THEREOF AND PROCESS FOR PREPARING SAME

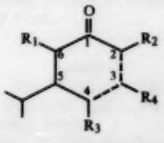
Philip T. Klemarczyk, Old Bridge; Lambert Dekker, Wyckoff, both of N.J., and Jacob Kiwala, Brooklyn, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 343,580, Jan. 28, 1982, Pat. No. 4,400,311. This application May 5, 1983, Ser. No. 492,010

Int. Cl.[3] *C07C 49/603, 45/45*

U.S. Cl. 568—353 **7 Claims**

1. At least one compound defined according to the structure:



wherein one of the dashed lines represents a carbon-carbon double bond and the other of the dashed lines represents a carbon-carbon single bond; wherein R_4 represents methyl or ethyl; wherein one of R_1, R_2 and R_3 represents 2-methyl-1-

propenyl or 2-methyl-1-propylidenyl; and the other of R_1, R_2 and R_3 represent hydrogen; with the provisos that:

(i) when the dashed line at the 3–4 position is a double bond, then R_3 is hydrogen or 2-methyl-1-propenyl;

(ii) when the dashed line at the 2–3 position is a double bond, then R_2 is hydrogen or 2-methyl-1-propenyl;

(iii) when R_4 is ethyl, then R_2 is methyl and the double bond is at the 2–3 position; and

(iv) when R_4 is methyl, then R_2 is hydrogen; 2-methyl-1-propenyl or 2-methyl-1-propylidenyl.

4,449,009

ACETYL DIMETHYLBUTYLCYCLOHEXENE AND ORGANOLEPTIC USES THEREFOR

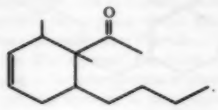
Richard J. Tokarzewski, Atlantic Highlands, and William L. Schreiber, Jackson, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Apr. 7, 1983, Ser. No. 482,824

Int. Cl.[3] **C07C** *49/537*

U.S. Cl. 568—377 **1 Claim**

1. The compound having the structure:



4,449,010

INSULATOR GUARD

Kenneth P. Apperson, Chaulkville, and Cecil D. Morgan, Centerpoint, both of Ala., assignors to Hastings Fiber Glass Products, Inc., Hastings, Mich.

Filed Sep. 28, 1982, Ser. No. 424,942
Int. Cl.³ H02G 1/02; H01B 17/00
U.S. Cl. 174—5 R 11 Claims

11. An insulator guard adapted to cover an overhead line insulator and the adjacent portion of an energized exposed conductor mounted on said insulator, whereby to provide protection against electrical shock, comprising: a hollow insulator cover made of electrical insulating material and adapted to cover the overhead line insulator, said cover having a substantially cylindrical sidewall and being open at one end thereof, said sidewall having a slot extending axially from said open end of said cover partway along the length of said sidewall, said slot being adapted to receive the conductor therethrough; a hollow ball-and-socket joint made of electrical insulating material, said ball-and-socket joint extending laterally outwardly from said sidewall at a location adjacent the axially inner end of said slot in said sidewall, said ball-and-socket joint comprising a hollow ball part and a hollow socket part, one of which parts is fixedly mounted on said sidewall and the other of which parts is interfitted with said one part so as to be capable of rotary motion with respect to said cover and said one part in every direction, said one part of said joint having a slot laterally aligned and communicating with the inner end of the slot in said sidewall of said cover and extending laterally outwardly therefrom so that the conductor can be received therethrough, said other part of said joint having a laterally outwardly extending slot which is alignable with said slot in said one part of said joint and with said slot in said sidewall of said cover so that the conductor can be received therethrough whereby a portion of said conductor that is adjacent to said cover can be received inside said joint, said other part of said joint being rotatable with respect to said one part thereof to move the slot of said other part out of lateral alignment with the slot of said one part whereby to releasably lock said guard on the insulator and the conductor and to completely encircle a portion of the conductor; and a line guard adapter attached to the laterally outer end of said other part of said joint and adapted to be moved with said other part.

4,449,011

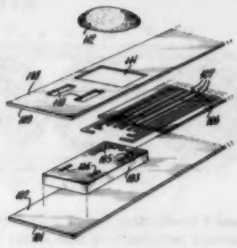
METHOD AND APPARATUS FOR ENCAPSULATION OF CHEMICALLY SENSITIVE FIELD EFFECT DEVICE

Jiri Kratochvil, Sandy; Nelson Ho, West Valley, and Jiri Janata, Salt Lake City, all of Utah, assignors to Critikon, Inc., Tampa, Fla.

Filed Jan. 8, 1982, Ser. No. 350,929
Int. Cl.³ H05K 5/00
U.S. Cl. 174—52 PE 4 Claims

1. For use in an apparatus employing a semiconductor chip having lead bonding pads and carrying at least one chemically sensitive field effect device which interacts with select ambient substances by means of one or more exposed selectively reactive membrane systems, an encapsulation system comprising:

tape means having conductive beam leads disposed thereon, said tape means defining an area to accommodate said chip, said beam leads terminating in first ends over said area, said tape means further defining first openings which are respectively adapted to be coincident with said membrane systems; wherein said tape means comprises respective first and second tapes, said first tape carrying said beam leads and said second tape defining a second opening coincident with the first ends of said beam leads, said first



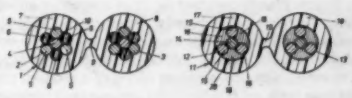
tape further defining said first openings; said tape means sealably overlaying at least said beam leads; whereby said tape means and a chip when connected thereto, will be aligned to leave exposed only at least a portion of each of said membrane systems.

4,449,012

OVERHEAD CABLE WITH TENSION-BEARING MEANS

Othmar Voser, Möriken, Switzerland, assignor to Kupferdraht-Isolierwerk AG Wildegg, Wildegg, Switzerland

Filed Dec. 15, 1981, Ser. No. 330,961
Claims priority, application Switzerland, Dec. 19, 1980, 9374/80
Int. Cl.³ H01B 7/08
U.S. Cl. 174—70 A 19 Claims



1. An overhead cable comprises at least two conductors each comprising a plurality of metal wires for signal transmission and a plurality of substantially non-extensible load-bearing substantially circular helically stranded fiber bundles, both said wires and bundles extending generally in the longitudinal direction of the cable and being helically stranded together, and an exterior protective cover enclosing said wires and bundles, and a bridge connecting together the covers of each adjacent pair of conductors in said cable, said conductor having one metal wire or fibre bundle at the center thereof as a core, said plural metal wires and said circular fibre bundles other than said core being arranged generally symmetrically around the core axis at substantially equispaced peripheral points therearound with said wires and bundles in alternating relation, said symmetrically arranged wires being of like size and said symmetrically arranged bundles being of like size, each such bundle being in abutting contact with said core and the adjacent pair of wires.

4,449,013

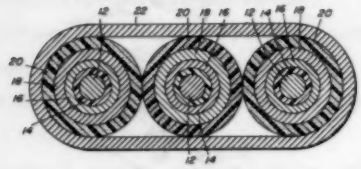
OIL WELL CABLE

Alfred Garschick, Raynham, Mass., assignor to BIW Cable Systems, Inc., Boston, Mass.

Filed Feb. 26, 1982, Ser. No. 352,797
Int. Cl.³ H01B 7/22
U.S. Cl. 174—103 7 Claims

1. In an electrical cable for use in a hostile environment, the combination of a plurality of electrical conductors disposed in

parallel relationship, each said conductor being surrounded by a relatively thick jacket of high-temperature, low-permeability insulating material, at least one relatively thin metallic barrier layer surrounding and bonded to each said jacket, a layer of semiconductive insulating material surrounding each said barrier layer and a conductive armor sheath surrounding and in electrical contact with each of said layers of semiconductive insulating material, said layers of semiconductive material cushioning said electrical conductors from said armor sheath and providing a conductive path between said metallic barrier layers and said armor sheath along the length of said cable.



4,449,014

PLASTIC/METAL LAMINATES, CABLE SHIELDING OR ARMORING TAPES, AND ELECTRICAL CABLES MADE THEREWITH

Richard H. Brezinsky, Newark, Ohio, assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 225,946, Jan. 19, 1981, abandoned. This application Aug. 9, 1982, Ser. No. 406,661

Int. Cl.³ B32B *15/08;* **H01B** *7/18, 7/22*

U.S. Cl. 174—107 **20 Claims**

1. A plastic/metal laminate comprising at least one metallic substrate having directly adhered to at least one surface thereof a multi-layered plastic coating consisting essentially of a first thermoplastic polymer layer of a random copolymer of ethylene with an ethylenically unsaturated carboxylic acid monomer, said first layer being directly adhered to said metallic substrate, and a second thermoplastic polymer layer which consists essentially of a polymer blend of a random copolymer of ethylene with an ethylenically unsaturated carboxylic acid and at least one ethylenic polymer resin which is not a random copolymer of ethylene with an ethylenically unsaturated carboxylic acid monomer and which is directly adhered to said first polymer layer on the surface thereof opposite said metallic substrate; said blend layer being further characterized by being capable, when employed as an intermediate adhesive layer between said first polymer layer and an olefin polymer layer composed of an olefin polymer resin selected from the group consisting of ethylene homopolymers and copolymers of a major proportion of ethylene with a minor proportion of a comonomer which is polymerizable therewith, of providing higher 90° peel adhesion as between said first polymer layer and said olefin polymer layer when measured at 10° F. or 160° F. than is obtained by directly adhering said first polymer and said olefin polymer layer to each other.

4,449,015

CONNECTOR COVER WITH MULTIPLE MOUNTING MEANS

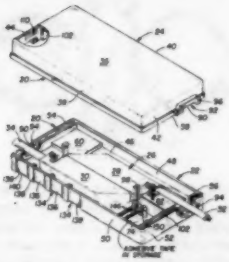
Kenneth W. Hotchkiss, Golden; John A. Popken, Longmont, and Nellie S. Griffith, Boulder, all of Colo., assignors to Proto Production Plastics, Inc., Boulder, Colo.

Filed May 18, 1981, Ser. No. 264,649

Int. Cl.³ H01R *13/52;* **H02G** *3/10*

U.S. Cl. 174—138 F **23 Claims**

9. An improved cable connector cover of the type having a body adapted to house a cable connector and defining a cable passage opening having an arcuate side, a sliding door means associated with the cable passage opening and having an arcuate edge opposed to the arcuate side of the cable passage opening, wherein the sliding door means is of the type having a plate with the arcuate edge at one end thereof and a cable contacting member extending normally to the plane of the plate from the arcuate edge and defining an arcuate seat substantially as wide as the cable passage opening, guide means for directing the sliding door means in a path toward the arcuate edge of the opening, and friction means for retaining the door in a given position along the path toward the arcuate edge, wherein the improvement comprises:



a cable access panel formed in a wall of the cover and having a perimetric line of weakness for guiding the separation of the cable access panel from the wall, wherein the cable access panel is of a size that the hole created in the wall by removal of the cable access panel will permit passage of at least one-half of a cable connector therethrough; and

a flexible ear at each side of said seat, deformable under contact with the arcuate side of the cable passage opening, whereby the ears are guided to follow the curvature of the cable passage opening.

4,449,016

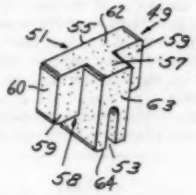
CERAMIC HEATER SUPPORT AND SPACER BLOCK

Lorne A. Best, West Bloomfield, Mich., assignor to National Element, Inc., Troy, Mich.

Division of Ser. No. 227,434, Jan. 22, 1981, Pat. No. 4,337,390. This application Dec. 14, 1981, Ser. No. 330,101

Int. Cl.³ H01B *17/56*

U.S. Cl. 174—138 J **1 Claim**



1. A heater support and spacer block adapted for mounting on a support for spacing and retaining an electric resistance heating wire primarily for use in a plug-type convection heater comprising:

a ceramic unitary body having opposed, parallel and spaced apart end faces and being symmetrical about a central plane perpendicular to said end faces;

said body including a support boss extending on opposite sides of the central plane, and extending between and including said end faces;

said body including a pair of spacer bosses which project in opposite directions laterally outwardly from said support boss and terminate in side faces which are spaced from the aforesaid central plane;

said support boss having a width measured in a direction

perpendicular to the central plane which is less than the distance between the side faces of said spacer bosses;

said body including said support boss and said spacer bosses having a top face of T-shaped configuration and said support boss having a bottom face of generally rectangular configuration parallel to and spaced from said top face;

said spacer bosses having end surfaces in the plane of one of said end faces;

said spacer bosses being of the same height measured in a direction parallel to the central plane which is less than the height of said support boss;

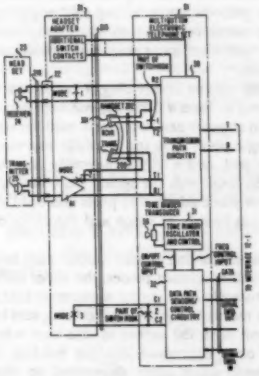
and an elongated groove in the bottom face of said support boss extending between and being perpendicular to said end faces.

4,449,017

ACD COMBINED HANDSET AND HEADSET ARRANGEMENT

Edmund T. Burke, West Long Branch; Joseph F. Catalano, Holmdel; James A. Henderson, Jr., Neptune, and Nicholas K. Smith, Middletown, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 28, 1982, Ser. No. 383,314
Int. Cl.³ H04Q *3/64*
U.S. Cl. 179—27 D **13 Claims**



1. A communication system having a plurality of telephone stations operable for completing communication connections thereto, said system comprising

means for providing at a called station a broadcast signal indicating the presence of an incoming connection to said station,

means controlled by an answer signal from said station subsequent to said provided broadcast signal for establishing a communication connection to said station,

means for monitoring said station to determine if said station is in one particular mode or an alternate mode,

means operative when said station is determined to be in said alternative mode for inhibiting said provided broadcast signal and for providing instead a pretimed signal, and

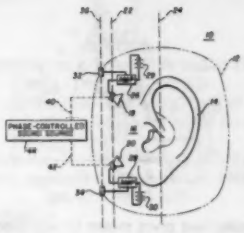
means operative at the conclusion of said pretimed signal for establishing said communication connection to said station without regard to said answer signal.

4,449,018

HEARING AID

Austin N. Stanton, 3017 Stonehenge La., Carrollton, Tex. 75006

Filed Jun. 7, 1982, Ser. No. 386,020
Int. Cl.³ H04R *5/00*
U.S. Cl. 179—107 FD **9 Claims**



1. Apparatus for audible assistance to persons with impaired hearing, comprising:

a vertically arrayed group of audio speakers positioned anterior to the pinna of a human ear, each said speaker independently radiating sounds to the ear,

a vertically arrayed set of microphones positioned anterior to said speakers, said microphones corresponding respectively to said speakers, and

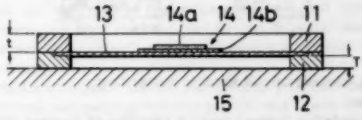
an amplifier for each of said speakers, each said amplifier interconnecting the corresponding ones of said microphones and said speakers.

4,449,019

PIEZOELECTRIC LOUDSPEAKER

Sasuga Kakehi, Kanazawa; Nobuhiko Nakagawa, Ishikawa; Hideo Adachi, Kanazawa, and Tadashi Takaya, Kanazawa, all of Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Nov. 9, 1981, Ser. No. 319,362
Claims priority, application Japan, Nov. 11, 1980, 55-158559
Int. Cl.³ H04R *17/10*
U.S. Cl. 179—110 A **5 Claims**



1. A piezoelectric loudspeaker having a piezoelectric transducer including a thin plate of piezoelectric ceramic of a high dielectric constant, said transducer being fixed to a diaphragm stretched onto frame, so that the resonance frequency of a sound generator comprising said piezoelectric transducer and diaphragm is set at a low frequency band side of an audio frequency region and the resonance frequency of a cavity formed by said frames is set at a high frequency band side.

4,449,020

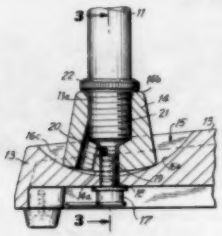
MULTI-POSITION MICROPHONE STAND SUPPORT ASSEMBLY

Frederick L. Seebinger, Smoke Rise, N.J., assignor to Atlas Sound Division of American Trading & Production Corporation, Parsippany, N.J.

Filed Aug. 24, 1981, Ser. No. 295,907
Int. Cl.³ H04R *1/02*; F16M *11/00*
U.S. Cl. 179—147 **14 Claims**

1. A microphone stand assembly for supporting a microphone support column comprising a base, said base including therein a track means, a pivot means adapted to be positioned

within said track means at at least two predetermined positions, said pivot means being constructed and arranged to support a microphone support column, and a locking means for cooperating with said track means and said pivot means for selectively positioning said pivot means to said base at one of said predetermined positions, said pivot means including at least two positioning means for permitting said locking means to be engaged with said positioning means to orient said pivot means at one of said predetermined positions.

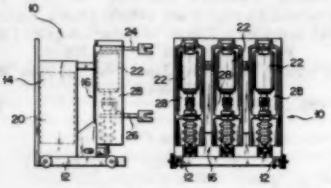


4,449,021

VACUUM CIRCUIT BREAKER

Hideaki Wakayama; Jyunji Fujiwara, and Kanya Doi, all of Tokyo, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 24, 1982, Ser. No. 351,874
Claims priority, application Japan, Mar. 6, 1981, 56-31262
Int. Cl.³ H01H *33/66*
U.S. Cl. 200—144 B **10 Claims**



1. A vacuum circuit breaker comprising:

a base;

an insulating frame having a plurality of housing portions juxtaposed and separated from one another by a predetermined distance and a connecting portion for connecting adjacent housing portions, said insulating frame being made of plastic as a unit;

a plurality of vacuum interrupters each having a fixed electrode and a movable electrode and being rigidly supported in one of the respective housing portions, each housing portion being formed to cover the upper, lower and three lateral sides of the vacuum interrupter and having an open front to allow the vacuum interrupter to be easily exchanged with a new one therethrough;

a plurality of pairs of main circuit conductors, one said pair being provided for each of said housing portions and being rigidly supported in the respective housing portions, the main circuit conductors of each said pair connected to the fixed and movable electrodes of each vacuum interrupter;

a support frame detachably mounted on the base and supporting the insulating frame, the support frame being aranged at a backside of the insulating frame, said backside being opposite said open front; and

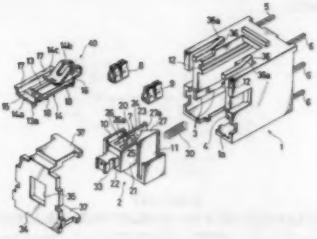
an operating means supported by the support frame for moving the movable electrodes of said vacuum interrupters.

4,449,022

SELF-HOLDING TYPE PUSH SWITCH WITH HEART TYPE CAM

Hiroshi Uno, Yao, and Kenji Furuhashi, Osaka, both of Japan, assignors to Hosiden Electronics, Co., Ltd., Yao, Japan

Filed Feb. 3, 1983, Ser. No. 463,490
Claims priority, application Japan, Feb. 12, 1982, 57-19054[U]
Int. Cl.³ H01H *13/56*
U.S. Cl. 200—153 J **6 Claims**



1. A self-holding type push switch with heart shaped cam, comprising:

a switch case, a slider means movably disposed in the switch case, and an engaging means limiting relative movement of the switch case and the slider;

said switch case defining an enclosure and having contact pieces therein for receiving said slider means and having receptacle grooves for receiving said engaging means, the engaging means operative to alternately hold said slider means in specified inner and outer positions within the switch case;

said engaging means comprising a hook rod bent at both ends thereof to form a C-shape, and a spring plate member adapted to support said hook rod, said spring plate member having a pivot hole for pivotally carrying one end of said hook rod, and a slit for movably carrying the other end of said hook rod, the spring plate having a body and a bent-over piece adapted to press and hold said hook rod between the bent-over piece and the body of the spring plate;

said slider means having a heart-shaped cam having a recess and conductive contact pieces, the slider being resiliently urged outwardly by a spring member in said switch case, said slider means being adapted to bring said hook rod into engagement with the recess of said cam when the slider means is once depressed, thereby holding the slider in position and, when again depressed, to disengage said hook rod from the recess of said cam, whereby said slider means effects changeover of connection between said contact pieces.

4,449,023

TRANSPARENT SWITCH HAVING FINE LINE CONDUCTORS

Jacques J. Hilhorst, Greensboro, and Donald G. Stillie, Winston-Salem, both of N.C., assignors to AMP Incorporated, Harrisburg, Pa.

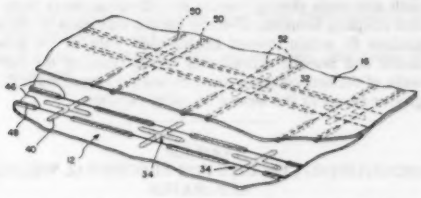
Filed Dec. 23, 1982, Ser. No. 452,642
Int. Cl.³ H01H *3/12*
U.S. Cl. 200—159 B **8 Claims**

1. A membrane switch assembly comprised of two layers of substantially transparent film having internal surfaces that are separated from each other by spacing means, the spacing means having openings therein constituting switch sites, the internal surfaces of each layer having electrodeposited hairline

conductors thereon, the conductors crossing and being normally spaced from each other at the switch sites, the assembly being characterized in that:

the internal surface of the first layer has a plurality of electrodeposited spaced-apart parallel double hairline conductors, each double conductor having a first portion, an intermediate portion, and a second portion, the first and second portions of the double conductor being essentially parallel to each other, with the intermediate portion connecting the first and second portions, the distance between the first and second portions of each double conductor being less than the distance between adjacent conductors,

the internal surface of the second layer has a plurality of spaced-apart parallel double hairline conductors electro-



deposited in a direction normal to the direction of the first layer conductor, the first sites being created by the crossing double hairline conductor of the first and second circuit layers when they are assembled, thus giving four points of contact at each site,

the spacing means is a polymer spacer comprised of an insulating ultraviolet curable polymer applied in parallel strips over the conductors, the polymer spacer being discontinuous at the switch sites, whereby,

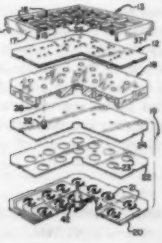
as force is applied at the switch site to bring the two layers of conductors together, an electrical circuit can be completed at any one of four crossing locations thus providing redundancy and insuring the completion of the electrical circuit even if the force has been applied at the periphery of the switch site.

4,449,024

BACKLIGHTED ILLUMINATED KEYBOARD

Steve W. Stracener, Evans, Colo., assignor to KB Denver, Inc., Frederick, Colo.

Filed May 3, 1983, Ser. No. 491,246
Int. Cl.³ H01H *9/18*
U.S. Cl. 200—317 **17 Claims**



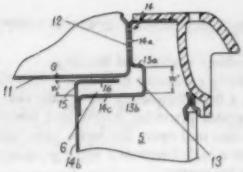
1. An illuminated keyboard comprising, a switch assembly having a printed circuit board with a plurality of switch sites and a dome coacting with each said site to define a switch, a light diffuser above said switch assembly, a plurality of dome actuating pins guidably received in said diffuser, one each aligned with a dome and one end of which engages a dome, a translucent graphic overlay above said diffuser engaging the other ends of said pins, an opaque bezel over said overlay defining a plurality of key areas for said overlay, one each aligned with an actuating pin, whereby pressure in a key area causes depression of a pin and actuation of the dome in alignment therewith to close the switch including said dome, a single light source for lighting the entire overlay, and means removably and centrally mounting said light source on said printed circuit board such that it extends into said diffuser for transmitting light energy therethrough to light the key areas of the entire overlay.

4,449,025

DOOR SEAL CONSTRUCTION FOR HIGH FREQUENCY HEATING APPLIANCE

Nobuo Ikeda, and Hirofumi Yoshimura, both of Nara, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 30, 1981, Ser. No. 307,361
Claims priority, application Japan, Oct. 3, 1980, 55-138942
Int. Cl.³ H05B *6/76*
U.S. Cl. 219—10.55 D **2 Claims**



1. A microwave heating apparatus, comprising:

a heating cavity having a front opening thereinto, an inner wall extending inwardly into said cavity from said front opening and a front wall extending radially away from said front opening parallel to the plane of said front opening;

means for generating microwave energy and for guiding said energy into said heating cavity;

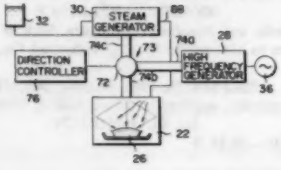
a door mounted on said apparatus for opening and closing said front opening, said door having an inwardly facing door surface facing toward said heating cavity which has an outer peripheral part engagable with said front wall when said door is closed and having a central inner part which is positioned within said cavity when said door is closed;

a choke attenuator around the periphery of said door between said outer peripheral part of said inwardly facing door surface and said inner part of said inwardly facing door surface and being constituted only by an inwardly extending wall part extending between said outer peripheral part and said inner part of said inwardly facing door surface, an end wall extending radially outwardly from said inner part of said inwardly facing door surface, and an outer wall extending parallel to said inwardly extending wall part and extending outwardly from the radially outer end of said end wall and terminating short of said outer peripheral part of said inwardly facing door surface and spaced slightly radially inwardly of said inner wall when said door is closed, the space within said choke attenuator being unobstructed, said outer peripheral part of said inwardly facing door surface having a recess at the radially inner end thereof and having an opening facing toward said cavity, the recess having a radially inner side wall which is an extension of said inwardly extending wall part of said choke attenuator, and a radially outer side wall spaced outwardly of said outer wall of said choke attenuator, said opening extending between said radially inner side wall and said radially outer side wall and being unobstructed.

4,449,026
HIGH FREQUENCY AND STEAM HEATING METHOD AND APPARATUS

Seiichi Satoh, Fujinomiya, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation of Ser. No. 248,283, Mar. 27, 1981, abandoned, which is a continuation of Ser. No. 35,641, May 3, 1979, abandoned. This application Mar. 2, 1983, Ser. No. 471,061
Claims priority, application Japan, May 8, 1978, 53-54326
Int. Cl.³ H05B *6/66*
U.S. Cl. 219—10.55 B **3 Claims**

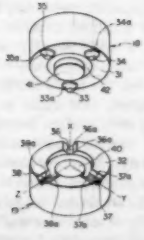


1. A high frequency heating apparatus comprising:
a housing;
an oven provided within said housing;
a high frequency generator provided within said housing for supplying a high frequency wave into said oven;
a steam generator provided within said housing for supplying steam into said open, the steam generator utilizing as a heat source a high frequency wave generated by said high frequency generator;
microwave circulator means for selectively directing a high frequency wave from said high frequency generator to said oven or said steam generator; and
a control circuit including:
a steam generator timer for setting an energization period of said high frequency generator, and
a high frequency generator timer for setting an energization period of said high frequency generator, and
drive means for driving said steam generator before said high frequency generator in each cooking cycle and for independently controlling the energization periods of said high frequency generator and said steam generator in response to the operations of said high frequency generator timer and said steam generator timer, respectively.

4,449,027
ELECTRODE MOUNTING DEVICE

Misao Fujikawa, Yokohama, Japan, assignor to Sodick Co., Ltd., Yokohama, Japan

Continuation of Ser. No. 110,863, Jan. 9, 1980, abandoned. This application Aug. 4, 1982, Ser. No. 404,943
Claims priority, application Japan, Feb. 6, 1979, 54-13351
Int. Cl.³ B23B *31/02*; B23P *1/12*
U.S. Cl. 219—69 E **5 Claims**

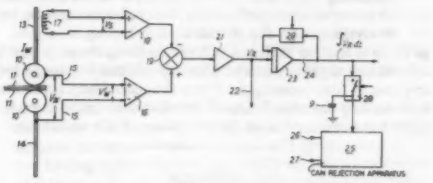


1. A self-aligning electrode mounting device in an electrical discharge machining apparatus comprising first and second coupling members, one of which is fixed to the electrical discharge machining apparatus in a predetermined positional relation thereto, and the other coupling member of which is mounted on a machining electrode in a predetermined positional relation thereto, the first and second coupling members having self-aligning means for coupling together with a self-aligning force for self-aligning the first and second coupling members during coupling to precisely locate and position the machining electrode on the electrical discharge machining apparatus, the first coupling member comprising self-aligning positioning projections, each projection extending from its own round base on the first coupling member and having a curved side wall extended toward the second coupling member, and the second coupling member having groove means with side walls sloping inward in a direction away from the first coupling member, whereby curved side walls of the projections fit within inward sloping side walls of the groove means and provide self-aligning forces between the curved walls of the first coupling member and the sloped walls of the groove means of the second coupling member.

4,449,028
MONITORING CIRCUITS FOR ELECTRICAL WELDING APPARATUS

Keith Buxton, Mansfield, England, assignor to Metal Box Limited, Reading, England

Filed Aug. 26, 1981, Ser. No. 296,506
Claims priority, application United Kingdom, Sep. 1, 1980, 8028204
Int. Cl.³ B23K *11/24*
U.S. Cl. 219—109 **15 Claims**



1. A monitoring circuit for monitoring the electrical energy expended in forming a weld nugget during one half-cycle of an a.c. resistance welding apparatus, which comprises first means for deriving a voltage in quadrature phase relation to the resistive component in-phase with the welding current, second means for deriving a monitored weld voltage which inherently contains a significant reactive component due to electromagnetic effects, and summing means for summing the quadrature voltage and the monitored weld voltage in such manner that the reactive component of the monitored weld voltage is substantially cancelled by the quadrature voltage, and for producing a voltage output signal representative of their sum, said output signal being thereby representative substantially only of the resistive or in-phase component of the weld voltage.

4,449,029
ACOUSTIC WAVE SPOT WELDER ADAPTIVE CONTROL

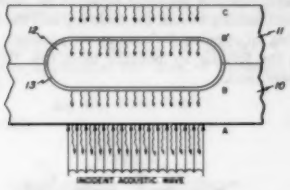
Herman A. Nied, Ballston Lake, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed May 9, 1983, Ser. No. 492,845
Int. Cl.³ B23K *11/24*
U.S. Cl. 219—117.1 **9 Claims**

1. A method of controlling weld nugget penetration during resistance spot welding comprising:
transmitting longitudinal acoustic pulses into a workpiece held between electrodes and welded by passage of current which generates heat and forms a molten weld nugget;

receiving waves reflected from solid/solid and liquid/solid workpiece interfaces;

tracking the position of at least one liquid/solid interface as



the weld nugget grows by pulse time discrimination of reflected waves; and

turning off the current when proper weld penetration is achieved.

4,449,030

APPARATUS FOR SENSING THE DISTANCE BETWEEN AN OBJECT OF ELECTRICALLY CONDUCTIVE MATERIAL AND A REFERENCE POINT

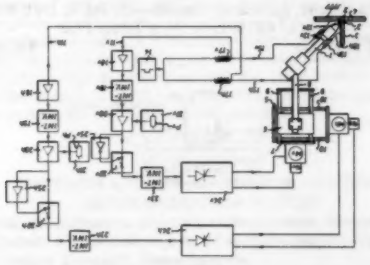
Sven G. R. Blomdahl, Trastvägen 6, S-241 00, Eslöv, Sweden

Filed Jun. 25, 1982, Ser. No. 392,075

Claims priority, application Sweden, Jul. 3, 1981, 8104141

Int. Cl.³ B23K *9/10*

U.S. Cl. 219—124.34 **5 Claims**



1. An apparatus for sensing the distance between a workpiece of electrically conductive material and a reference point, the apparatus comprising: a welding gun for forming a seam on the workpiece, an electrode rigidly connected to the welding gun, electrically insulated from the welding gun and having a tip forming the reference point, supply line means for connecting said electrode to a high voltage source and generating high voltage pulses thereby generating an arc between the electrode tip and the workpiece, measuring means for sensing the electric field around the supply line means and for generating a measuring signal corresponding to the electric field, a measuring signal sensing circuit for determining the distance between the workpiece and reference point based upon the measuring signal, and transmitting means for connecting the measuring means to the measuring signal sensing circuit.

4,449,031

TUBULAR COMPOSITE APC WELDING ELECTRODE FOR VERTICAL UP WELDING OF STAINLESS STEEL AND NICKEL-BASE ALLOYS

Damian J. Kotecki, York, Pa., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Continuation-in-part of Ser. No. 140,825, Apr. 16, 1980, Pat. No. 4,314,136. This application Jan. 20, 1982, Ser. No. 341,116

The portion of the term of this patent subsequent to Feb. 2, 1999, has been disclaimed.

Int. Cl.³ B23K *35/30*

U.S. Cl. 219—146.23 **4 Claims**

1. In a tubular composite arc welding electrode comprising a metallic outer sheath and a core within and enclosed by the sheath, of the type wherein the sheath and the metallic portion of the core are balanced to produce a stainless steel or nickel-base alloy weld deposit, the improvement which comprises providing a non-metallic portion of the core which consists essentially of a slag mix constituting from 6 to 15 weight percent of the electrode, the slag mix containing the following listed components in the proportions stated:

	Weight percent of Slag Mix
Arc stabilizer selected from potassium titanate, sodium titanate and alkali metal oxide	up to 15
Fluoride selected from calcium fluoride, magnesium fluoride, sodium fluoride, lithium fluoride, aluminum fluoride, potassium silicofluoride, and cryolite	up to 50
Silicon dioxide	up to 10
Zirconium dioxide	15 to 60
Titanium dioxide	balance,

whereby the electrode operates satisfactorily in vertical up welding.

4,449,032

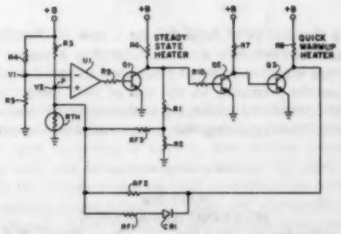
VARIABLE GAIN OVEN TEMPERATURE CONTROL CIRCUIT

Marvin E. Frerking, Cedar Rapids, Iowa, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 9, 1983, Ser. No. 465,228

Int. Cl.³ H05B *1/02*

U.S. Cl. 219—210 **9 Claims**



1. A circuit for controlling the temperature in an oven, comprising:

a quick warm-up heater and a steady state heater, each comprising an electrical resistance element, located in the oven;

sensing means located in the oven for sensing the temperature;

steady-state amplifier means having an input and having an

output connected to control the power supplied to the steady-state heater;

quick warm-up amplifier means having an input and having an output connected to control the power supplied to the quick warm-up heater;

an input means connected between the sensing means and the input of the steady-state amplifier means, the input means being also coupled to the input of the quick warm-up amplifier means;

a low-gain feedback means coupled between the quick warm-up amplifier means and the input means;

a high-gain feedback means coupled between the steady-state amplifier means and the input means;

the circuit being operative responsive to the sensing means sensing a large difference in temperature in the oven below a predetermined set temperature to fully turn on the quick warm-up amplifier means to apply a maximum power to the quick warm-up heater, until the sensed temperature rises to a value which causes the quick warm-up amplifier means to reduce the power in the quick warm-up heater in a continuous range, causing the low-gain feedback means to become effective, until the sensed temperature reaches a value which causes the quick warm-up amplifier means to be turned off with no significant power in the quick warm-up heater, which causes the high gain feedback means to become effective with the steady-state amplifier means applying power in a continuous range to the steady-state heater, which is then effective to control the temperature very near to the set temperature.

4,449,033

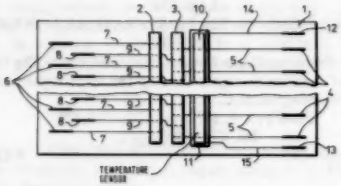
THERMAL PRINT HEAD TEMPERATURE SENSING AND CONTROL

Richard G. McClure, Georgetown; James M. Rakes, Leander, and Errol R. Williams, Round Rock, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 27, 1982, Ser. No. 452,989

Int. Cl.³ H05B *1/02*

U.S. Cl. 219—216 **11 Claims**



1. In a thermal print head having a row of thermal print elements, a temperature sensor comprising a sensor bar of temperature sensitive material positioned in parallel with and in heat transfer proximity to, the row of print elements, and a controller operatively connected to the sensor bar and responsive thereto for regulating the power input to the print elements.

4,449,034

HEATING APPARATUS

Kazuyoshi Taniguchi, 126 Linda La., Green Creek, N.J. 08219

Continuation-in-part of Ser. No. 74,924, Sep. 13, 1979, abandoned. This application Oct. 30, 1981, Ser. No. 316,722

Int. Cl.³ H05B *1/00*

U.S. Cl. 219—217 **5 Claims**

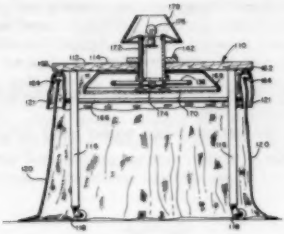
1. An apparatus for providing a user a warm environment within a cold environment, comprising:

a table having a table top with a thermal insulating material disposed between an upper and lower surface of said table top, the table top supported by legs and having a peripheral edge, the table top and legs surrounding the legs of the user when seated at the table;

electric heating means disposed beneath the table top and attached thereto;

a metallic reflector disposed between the table top and the radiant heating means, the table top and the reflector each having an opening defining an air passage;

means for forcing air beneath table top, through the air passage; and,



a flexible skirt member releasably secured around the peripheral edge and depending from the table top, the skirt member adapted to drape over the user's legs when inserted below the table top, the skirt confining heat to the user's legs, partially enveloped by the skirt and thereby kept comfortably warm, despite substantially cooler temperatures in the cold environment.

4,449,035

ARRANGEMENT FOR MOUNTING A THERMISTOR-TYPE TEMPERATURE SENSOR IN A METALLIC HEATING DEVICE

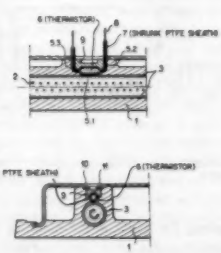
Pierre Schwob, Lyons, France, assignor to SEB S. A., Selongey, France

Filed Dec. 22, 1981, Ser. No. 333,266

Claims priority, application Luxembourg, Jul. 4, 1981, 83286

Int. Cl.³ G01K *1/16, 7/16;* H05B *1/02*

U.S. Cl. 219—251 **9 Claims**



1. A heating device including a body having a metal mass and an electric resistance element for heating the mass, and a temperature sensing thermistor which is disposed in a cavity between an orifice in the mass and a metal sealing plug having substantially the same composition as the mass and is connected to the exterior of the mass by lead means, wherein the thermistor and the lead means are housed in a shrunk sheath of thermoplastic material, and wherein the orifice and that face of the plug which is adjacent the orifice are so shaped as to define for the cavity a shape substantially corresponding to the space occupied in the orifice by the sheath containing the thermistor and the lead means.

4,449,036

ELECTRIC CIGAR LIGHTER WITH A SNAP DISK FORMING A BIMETALLIC SWITCH

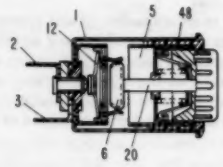
Georg Seibel, Dreieich; Günther Mues, Dietzenbach-Steinberg, and Theodor Horn, Kriftel, all of Fed. Rep. of Germany, assignors to Schoeller & Co., Frankfurt, Fed. Rep. of Germany

Filed Feb. 24, 1983, Ser. No. 469,257

Claims priority, application Fed. Rep. of Germany, Feb. 26, 1982, 3206904

Int. Cl.³ F23G 7/02

U.S. Cl. 219—265 9 Claims



1. An electric cigar lighter, such as used in a motor vehicle, comprising a socket forming a tubular bore and having a first end and a second end, contact means in the first end of said pocket and forming a part of the heating circuit of the lighter, a bimetallic switch including a snap disk located within the tubular bore in said socket, a plug located within the tubular bore in said socket and including a cup containing a heating element, said plug including an axially extending plug sleeve, a control knob mounted in and axially displaceable within said plug sleeve, said control knob is connected to said heating element, a restoring spring positioned within said plug sleeve and in operative engagement with said control knob, said cup and heating element are movable between an off-position and an on-position by axially displacing said control knob into said socket, means for holding said snap disk within said socket, said cup containing said heating element is in engagement with said means in the on-position, in the on-position said snap-disk engages said contact means and connects said heating element to the heating circuit, wherein the improvement comprises that said contact means comprises a tubular member secured to the first end of said socket, said means for holding said snap disk comprises an adjustment spring disposed in a sliding fit within said tubular member, a contact part supported on said adjustment ring, and said contact part has an outer circumferentially extending edge extending around the inner surface of said tubular member and retaining parts secured to the outer edge for holding the outer rim of said snap disk.

4,449,037

METHOD AND APPARATUS FOR HEATING SEMICONDUCTOR WAFERS

Yoshiyuki Shibamata, Machida; Hideo Onodera, Kawasaki, and Tadashi Kiriseko, Kanagawa, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 88,463, Oct. 26, 1979, abandoned. This application May 14, 1982, Ser. No. 378,261

Claims priority, application Japan, Oct. 31, 1978, 53-134140

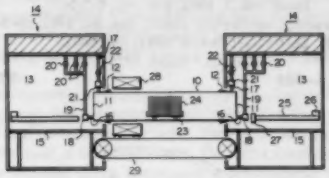
Int. Cl.³ F27B 9/06; C23C 13/08

U.S. Cl. 219—388 22 Claims

1. A method for radiation heating semiconductor wafers comprising the steps of:

positioning a plurality of semiconductor wafers in a substantially vertical arrangement and substantially in parallel spacing to each other in an atmosphere within a horizontally disposed elongated reaction zone, with the main faces of the wafers being substantially perpendicular to the longitudinal axis of the horizontally disposed reaction zone, and

continuously moving along the longitudinal axis of the reaction zone a short radiation heating means, said heating means surrounding only a small part of the length of the reaction zone, forming a heating zone exhibiting when stationary a temperature profile with no flat portions along its length, moving at a speed of 10 cm/min. to 100 cm/min. relative to the wafers, having a high heating



temperature relative to a stationary heating means varied depending upon the moving speed of the short radiation heating means, and passing over each wafer placed in the reaction zone, thereby rapidly, evenly heating the vertically-arranged wafers directly by radiation.

4,449,038

APPARATUS FOR WELDING A JOINT BETWEEN PLASTIC PIPES

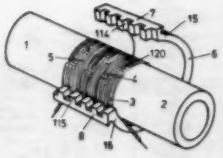
Fritz Reich, and Alfred Thalmann, both of Uhwiesen, Switzerland, assignors to George Fischer Ltd., Switzerland

Division of Ser. No. 242,301, Mar. 10, 1981, Pat. No. 4,365,144. This application Jul. 2, 1982, Ser. No. 394,769

Claims priority, application Switzerland, Mar. 10, 1980, 1850/80

Int. Cl.³ H05B 3/58

U.S. Cl. 219—535 6 Claims



1. An improved apparatus for welding together the abutting ends of two coaxially aligned plastic pipes, the apparatus being of the type including a heating mat having heating wire therein, said mat being wrappable around the pipes so as to encircle the abutment thereof with the ends of the mat substantially meeting at one side of the pipes, and a generally cylindrical, C-shaped sleeve of plastic material placeable around the mat with the ends thereof defining a slit, the sleeve being subjectable to clamping force in the direction of reduction of its circumference, the improvement wherein

said mat includes means defining end portions of different lengths so that said end portions interengage each other at the side where they meet; and

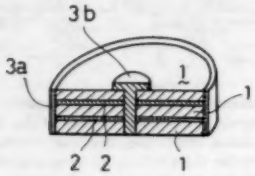
said sleeve includes means defining end portions of different lengths so that said end portions interengage each other to define a nonlinear slit.

4,449,039

CERAMIC HEATER

Takeshi Fukazawa, Kariya; Shunzo Yamaguchi, Okazaki, and Morihiro Atsumi, Toyohashi, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Sep. 7, 1982, Ser. No. 415,547
Claims priority, application Japan, Sep. 14, 1981, 56-144970; Oct. 8, 1981, 56-160817; Oct. 8, 1981, 56-160818
Int. Cl.³ H05B 3/10
U.S. Cl. 219—553 7 Claims



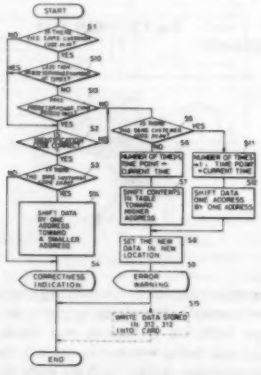
1. A ceramic heater having a heating element composed of a sintered body of a powdery mixture consisting essentially of from 50 to 90% by weight of alumina, from 10 to 50 of a member selected from the group consisting of titanium nitride, titanium carbide and a mixture thereof, and from 0.05 to 7.5% by weight nickel.

4,449,040

IDENTIFICATION CODE DETERMINING APPARATUS FOR USE IN TRANSACTION PROCESSING APPARATUS

Akira Matsuoka, Takatsuki, and Terukazu Tsukagoshi, Otokuni, both of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Dec. 7, 1981, Ser. No. 328,133
Claims priority, application Japan, Dec. 6, 1980, 55-172480
Int. Cl.³ G06K 7/10
U.S. Cl. 235—380 9 Claims



1. An apparatus for performing a transaction by using a record medium in which at least an identification code is machine readably recorded, comprising:

means for reading out the identification code recorded in said record medium,

entry means for entering, by a person seeking to perform a transaction, a secret number which corresponds to the identification code on said record medium,

means responsive to said secret number and said identification code for determining the validity of the record medium,

means for storing a first predetermined number corresponding to a number of times that unsuccessful entry attempts of the secret number are permitted,

storage means having a first storage region for storing a number of unsuccessful entry attempts of the secret number through said entry means and a second storage region for storing the time of the most recent unsuccessful entry attempt,

means for comparing said number of unsuccessful entry attempts stored in said first storage region of said storage means, with said first predetermined number stored in said storing means for determining whether the number of unsuccessful entry attempts exceeds the first predetermined number, and

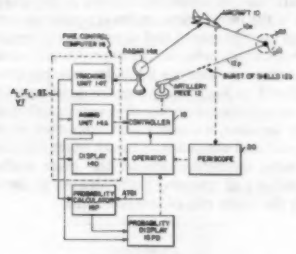
means responsive to determination of said comparing means that the number of unsuccessful entry attempts exceeds the first predetermined number, for disabling and validity determining means during a predetermined time period after the time of the most recent unsuccessful entry attempt stored in said second storage region of the storage means.

4,449,041

METHOD OF CONTROLLING ANTIAIRCRAFT FIRE

Donald D. Girard, Concord, Mass., assignor to Raytheon Company, Lexington, Mass.

Continuation-in-part of Ser. No. 193,867, Oct. 3, 1980, abandoned, which is a continuation-in-part of Ser. No. 967,539, Dec. 7, 1978, abandoned. This application Jan. 14, 1983, Ser. No. 457,831
Int. Cl.³ G06F 15/58; F41G 3/04
U.S. Cl. 235—412 1 Claim



1. The method of controlling an antiaircraft gun adapted to firing bursts of projectiles at a target aircraft, such method comprising the steps of:

(a) tracking the target aircraft to determine the course and speed of such aircraft;

(b) calculating the azimuth and elevation angles of the antiaircraft gun to provide proper lead angles to cause a first burst of projectiles from the antiaircraft gun to intercept the target aircraft at a calculated range;

(c) determining the initial probability that at least one of the projectiles in the first burst will intercept the target aircraft at the calculated range and firing such burst;

(d) continuing to track the target aircraft and to calculate the azimuth and elevation angles and the range to intercept;

(e) determining the change in probability that at least one of the projectiles in the first burst will intercept the target aircraft; and

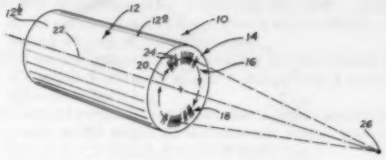
(f) firing a second burst of projectiles at the target aircraft if the initial probability decremented by the change in probability falls below a predetermined level.

4,449,042

REDEEMABLE CONTAINER WITH END CLOSURE REDEMPTION CODE

Alfred A. Hampson, Portland, Oreg., and Thomas B. Hutchins, deceased, late of Portland, Oreg. (by Nancy K. Hutchins, executrix), assignors to Can and Bottle Systems, Inc., Portland, Oreg.

Filed Mar. 1, 1982, Ser. No. 353,365
Int. Cl.[3] G06K 7/10
U.S. Cl. 235—464 9 Claims



1. In a redeemable carbonated beverage container or the like including a cylindrical side wall, and intended for distribution in a selected region,

a generally circular lid having inner and outer faces for joining with and closing off one axial end of said side wall, and

means formed with said lid defining, on the outer face thereof, an arcuately distributed, electromagnetic-wave-readable code unique to such region including redemption-code information,

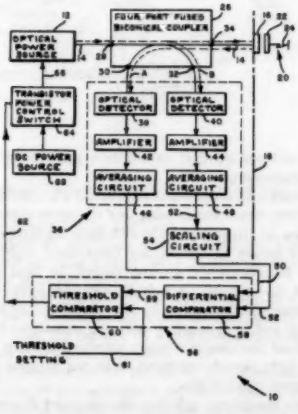
said code including code elements located along lines which generally radiate from the axis of revolution of said lid.

4,449,043

OPTICAL POWER SOURCE CONTROL SYSTEM

Charles R. Husbands, Acton, Mass., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Oct. 30, 1981, Ser. No. 316,703
Int. Cl.[3] G01J 1/32; G02B 5/14
U.S. Cl. 250—205 8 Claims



1. An optical power source control system comprising:

means for providing a source of optical energy;

means optically connected at one end thereof to said optical energy providing means for transmitting said optical energy to a preselected location removed from said energy source;

means connected to the other end of said transmitting means for connecting said transmitting means to an energy receiving means at said preselected location;

an optical coupler interconnected with said transmitting means, said optical coupler including means for permitting said optical energy to pass therethrough, means for receiving energy reflected from said connecting means and for transmitting said reflected energy has a first output therefrom, and means for transmitting a portion of said energy passing through said coupler as a second output therefrom;

means operably connected to said optical coupler for receiving said first output and said second output from said optical coupler and for compensating for any variations in amplitude in said first output and said second output, and for emitting a first compensated output signal and a second compensated output signal therefrom;

means operably connected to said compensating means for receiving said first compensated output signal and said second compensated output signal therefrom and comparing said first compensated output signal with said second compensated output signal in order to produce a reflected energy signal, and for emitting said reflected energy signal therefrom; and

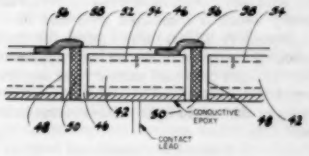
means operably connected between said reflected energy signal emitting means and said optical energy providing means for comparing said reflected energy signal with a predetermined signal and for providing a comparison signal to said optical energy providing means to control the output of said optical energy providing means whereby said comparison signal is indicative of whether or not said connecting means is connected to said energy receiving means.

4,449,044

FOCAL PLANE PHOTO-DETECTOR MOSAIC ARRAY APPARATUS

Ralph A. Rotolante, Acton, and Toivo Koehler, Lexington, both of Mass., assignors to Carson Alexion Corporation, Costa Mesa, Calif.

Division of Ser. No. 15,070, Feb. 26, 1979, Pat. No. 4,290,844. This application May 11, 1981, Ser. No. 262,296
Int. Cl.[3] H01J 40/14
U.S. Cl. 250—211 J 10 Claims



1. A focal plane photo-detector array structure comprising:

a plurality of substrate layers secured together and extending at right angles to the focal plane, said layers supporting between them a multiplicity of separate electrical conductors which terminate in spaced contact points at the focal plane;

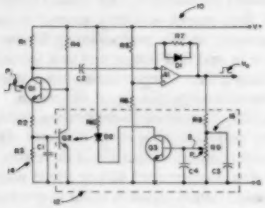
a layer of electrically conducting bonding material on the focal plane ends of the substrate layers; and

a multiplicity of individual photo-detectors which are physically and electrically isolated islands secured to the focal plane surface of the substrate layers by the bonding material, each island being located directly above, and connected electrically to, a single contact point provided by one of said electrical conductors.

4,449,045
LIGHT MONITORING ARRANGEMENT HAVING OPTICALLY COUPLED SATURATION PREVENTING CIRCUITRY

Roger Colvin, Portola Valley, Calif., assignor to Scientific Technology Incorporated, Mountain View, Calif.

Filed May 15, 1981, Ser. No. 264,013
Int. Cl.³ H01J 40/14
U.S. Cl. 250—214 AG **5 Claims**



1. An electrical circuit arrangement for monitoring the presence or absence of discrete light pulses displaying a minimum frequency at a given point, said arrangement comprising: a first circuit including a first light sensitive device for sensing the light present at said point including said minimum frequency pulses, if the latter are present, and cooperating electrical circuitry responsive to all of the light sensed for producing discrete electrical output pulses which correspond to said minimum frequency pulses if the latter are sensed and so long as the light pulses sensed do not reach an intensity level sufficiently high to electrically saturate said first circuit means and thereby distort said output pulses by causing the latter to merge with one another, said cooperating circuitry including a second light sensitive device and associated circuitry connected with the latter and said first light sensitive device, said second light sensitive device and its associated circuitry together forming a control network for preventing changes in light which appear at said given point but at a frequency below said minimum pulse frequency from affecting said output pulses, said control network also controlling operation of said first circuit sufficient to prevent electrical saturation of the latter when an appropriate amount of light is applied to said second light sensitive device and even though the intensity of the light pulses sensed reaches said sufficiently high level; and a second circuit including a light producing device in optical alignment with said second light sensitive device and cooperating circuitry which is connected with said first circuit and which is responsive to said output pulses for controlling said light producing device such that the latter applies the appropriate amount of light onto said second light sensitive device to prevent said first circuit from becoming saturated in the event the intensity of the sensed light pulses reaches said sufficiently high level.

4,449,046
START OF LINE DETECTION AND SYNCHRONIZATION CIRCUIT FOR OPTICAL SCANNING SYSTEMS

Leonard Zuckerman, Dix Hills, and Colin Taddonio, Port Jefferson Station, both of N.Y., assignors to Litton Systems, Inc., College Park, Md.

Filed Mar. 12, 1982, Ser. No. 357,500
Int. Cl.³ H01J 40/14
U.S. Cl. 250—235 **9 Claims**

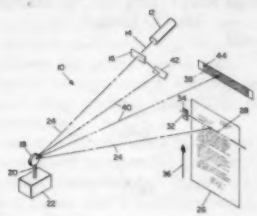
1. A start of line detection and synchronization circuit for use in an optical scanning system utilizing a grating scanning beam which generates a grating signal and a document scanning beam which generates a picture element signal as said scanning beam scans over a scan line having a reference target in said scan line comprising:

oscillator means which generate an oscillator signal;

means for detecting a first grating signal and connecting said grating signal to said oscillator means;

means for synchronizing said grating signal with said oscillator signal.

first counter means driven by said oscillator signal;



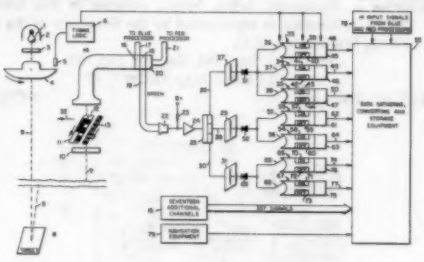
means for detecting said reference target in said scan line to enable said first counter means after synchronization of said oscillator and said grating signals; and

second counter means driven by said first counter means for, after a predetermined delay count, generating a start of line signal.

4,449,047
AIRBORNE MINERAL EXPLORATION SYSTEM

John N. Monroe, Waco, Tex., assignor to Sunoco Energy Development Co., a wholly-owned subsidiary of Sun Company, Inc., Dallas, Tex.

Filed Oct. 26, 1981, Ser. No. 315,330
Int. Cl.³ G01V 5/00; G01N 21/64
U.S. Cl. 250—253 **6 Claims**



1. An airborn mineral exploration system carried by an aircraft comprising:

(A) a source of downwardly directed ultraviolet light;

(B) pulsing means for causing said source to alternately issue a beam of ultraviolet light and issue no ultraviolet light;

(C) lens means for collecting fluorescent light emanating from targets on the ground within the field of view beneath the aircraft, which fluorescent light is issued in response to stimulation by the ultraviolet light from said source and in synchrony with the pulsations thereof;

(D) at least one chopper means disposed to chop the fluorescent light signals received from the ground targets and gathered by said lens;

(E) filter means for splitting the chopped fluorescent light signals into a plurality of color bands falling within the visible and infrared spectrum;

(F) light sensing and amplifying means disposed to separately sense and amplify target signal components falling within each said color band;

(G) at least one narrow band pass filter means coupled to the output of said light sensing and amplifying means, said narrow bandpass filter means being tuned to the frequency

of said at least one chopper means to thereby reject all signal components outside a narrow band centered at the chopper frequency;

(H) detector means coupled to the output of said narrow band filter means for changing the signal issued therefrom to an analagous d-c signal;

(I) integrator means for receiving and integrating said d-c signal, said integrator means including:

(i) a first integrator for receiving and integrating said d-c signal when said source is issuing a beam of ultraviolet light;

(ii) first switch means for connecting said first integrator to the output of said detector means when said source is issuing a beam of ultraviolet light;

(iii) a second integrator for receiving and integrating said d-c signal when said source is not issuing a beam of ultraviolet light;

(iv) second switch means for connecting said second integrator to the output of said detector means when said source is not issuing a beam of light; and

(v) a subtraction circuit for subtracting the d-c signal accumulated by said second integrator from the d-c signal accumulated by said first integrator to obtain an output d-c signal representing only sensed fluorescent light which has responded to said source and from which noise has been stripped; and

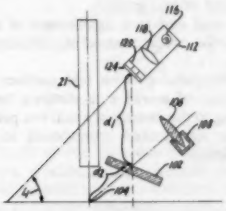
(J) timing means for synchronizing said first and second switch means with the respective periods during which said source issues and does not issue an ultraviolet beam.

4,449,048

WORKPIECE POSITIONING SYSTEM FOR BETA RAY MEASURING INSTRUMENTS

Philip B. Pinches, New York, and Sidney Lieber, Kings Point, both of N.Y., assignors to UPA Technology, Inc., Syosset, N.Y.

Filed Sep. 29, 1982, Ser. No. 426,717
Int. Cl.³ G01N *23/00*
U.S. Cl. 250—308 **5 Claims**



1. A beta backscatter type of thickness measuring instrument comprising

a workpiece supporting platform,

a probe assembly including a beta ray isotope source and a first mask defining a selectively contoured exposure area disposed adjacent thereto,

means for advancing said probe assembly along a predetermined path to place said mask in interfacially engaged relation with the surface of a workpiece disposed on said workpiece supporting surface,

a beam splitting mirror for providing a transmitted image of the portion of the workpiece surface disposed in the path of advance of said probe assembly at a remote location,

a reticle assembly including a second mask identically defining said selectively contoured exposure area and a light source for back illuminating said mask,

means for selectively prepositioning said back illuminated sound mask relative to said beam splitting mirror to provide a reflected image of said exposure area at the surface of said beam splitting mirror in superposed relation to said transmitted image of said workpiece surface that is indicative of the location of the exposure area to be defined by said first mask when the latter is disposed in interfacial engagement with said workpiece surface,

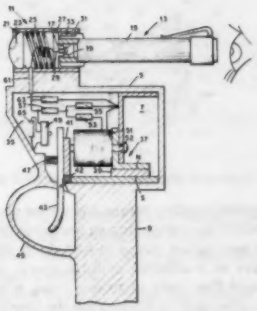
whereby said workpiece may be moved relative to said reflected image to precisely locate the surface area thereof that is to be exposed to radiation through said first mask when the latter is disposed remote therefrom.

4,449,049

PORTABLE BATTERY-FREE CHARGER FOR RADIATION DOSIMETERS

Frank W. Manning, Norris, Tenn., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 28, 1982, Ser. No. 343,607
Int. Cl.³ G01T *1/18*
U.S. Cl. 250—377 **10 Claims**



1. Charging apparatus for an electrometer-type dosimeter, comprising:

(a) a housing,

(b) means carried by said housing for supporting a dosimeter,

(c) electrical-contact means carried by said housing and including a pair of contacts for impressing a charging voltage across a dosimeter,

(d) a charging system in said housing, comprising:

(1) a magnetic loop including a permanent magnet for establishing magnetic flux therein, said loop including a segment which is hinged for arcuate movement between a loop-closed position and a loop-open position,

(2) coil means inductively coupled with said loop for generating voltage pulses when said segment is cycled between its loop-closed and loop-open positions,

(3) electrical circuit means for impressing voltage so generated across said pair of contacts, and

(e) a trigger carried by said housing, said trigger being operatively coupled to said segment to cycle the same between said positions.

4,449,050

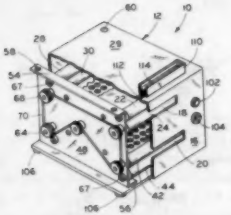
DEVICE FOR PROCESSING PAPER MONEY

Ralph Kamhi, 261 W. 35th St., New York, N.Y. 10001

Filed Mar. 25, 1982, Ser. No. 361,749
Int. Cl.³ H01J *37/20*
U.S. Cl. 250—455.1 **1 Claim**

1. A device for urging paper money of an elongated rectangular size of a prescribed length and width through movement in cleansing relation to an ultraviolet lamp source comprising a housing having a front panel, opposing top and bottom panels, a rear panel, and opposite side panels, an input slot and an output slot in said front panel for said paper money, three chute means each respectively mounted in a clearance position internally of said top, bottom and said rear panels and in spanning

relation between said opposite side panels so as to bound a central compartment for an ultraviolet lamp source and also defining a curved path for said paper money through said chutes, four motor-driven pairs of cooperating rollers operatively located in spanning relation between said opposite sides with two such pairs in interposed positions between said input and output slots and the ends of said two chutes adjacent thereto and with said other two such pairs in positions adjacent the other ends of said two pairs in positions adjacent the other ends of said two chutes and at the opposite ends of said third chute to thereby urge said paper money from said input slot through movement along said curved path of said three chutes and out through said output slot, each lower roller of the upper pairs of rollers and each upper roller of the lower pairs of rollers being mounted on shafts which extend beyond one said



housing side panel, a pulley means and means connected therefrom to said shafts for completing an operative driving connection made by said pulley means to said shafts for driving said pairs of rollers at a selected uniform speed, said operative locations of said four pairs of rollers being selected with respect to each other so as to be less than the length of said paper money, whereby a unit of paper money fed lengthwise into said input slot is always in engagement at either a leading or trailing edge thereof with one of said pairs of rollers during movement through said device to thereby contribute to the positive feed thereof so as to obviate any internal jamming, and an ultraviolet light source mounted to extend into said central compartment from said other housing side panel, whereby the motor drive for said rollers and the energizing connection to said ultraviolet light source are on opposite sides of said device to thereby contribute an optimum compact size therein.

4,449,051

DOSE COMPENSATION BY DIFFERENTIAL PATTERN SCANNING

Edward H. Berkowitz, Palo Alto, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Feb. 16, 1982, Ser. No. 349,293
Int. Cl.³ G01N *23/00*
U.S. Cl. 250—492.2 **12 Claims**

1. A method for irradiating a workpiece with a flux of charged particles to obtain a desired spatial distribution of integrated radiation dose thereon, comprising

(a) scanning the surface of the workpiece with said charged particle beam to irradiate said surface along locii of a first pattern in order to obtain a first integrated dose distribution over said surface,

(b) scanning selected regions of said surface wherein the integrated dose distribution established by step (a) is less than said desired spatial distribution than said regions, and

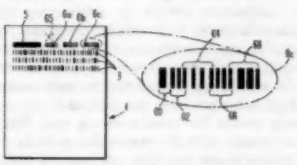
(c) repeating step (b) until said desired distribution is accomplished.

4,449,052

METHOD OF PRINTING AND DETECTING OPTIMUM BAR CODE TEST PATTERNS

Michael L. Krieg, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 30, 1981, Ser. No. 325,894
Int. Cl.³ G06K *7/10*
U.S. Cl. 250—568 **16 Claims**



1. A method of recording information on a print-receiving medium in a bar code in which the distance between the edges of separated marks defines the meaning of said code comprising the steps of

(1) printing a plurality of test patterns having groups of marks in said code of predetermined significance, each of said groups having edges of marks separated by different corresponding distances defining different densities of printed codes,

(2) subsequently sensing said test patterns with a machine-controlled sensing apparatus and determining the apparent significance of said groups,

(3) comparing said apparent significance of each said test pattern with the predetermined significance of that test pattern, and

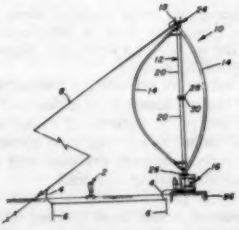
(4) printing subsequent data on said medium in said code with separation of marks at a distance between edges corresponding to the density of a said test pattern in which said apparent significance corresponds to its predetermined significance.

4,449,053

VERTICAL AXIS WIND TURBINE

Howard R. Kutcher, Allison Park, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Jul. 27, 1981, Ser. No. 287,028
Int. Cl.³ F01D *5/14*; F03D *7/04*; H02J *3/08*
U.S. Cl. 290—44 **17 Claims**



1. A vertical axis wind turbine, comprising:

a support structure;

a rotor shaft extending vertically upward from said structure;

a lower bearing supporting said rotor shaft in said support structure;

an upper bearing assembly adapted for disassembly from said turbine with said rotor shaft in the upwardly extending vertical position, the assembly comprising a housing having a top wall and having cable attaching means for attachment to guy cables to thereby maintain the housing in a substantially fixed position, an upstanding cylinder adapted for attachment to a top end of said rotor shaft within and spaced apart from the housing, bearing means between the cylinder and housing to maintain the cylinder in the spaced apart relationship with the housing and to allow the cylinder to rotate about its longitudinal axis, and lubrication means to automatically provide and maintain an adequate amount of oil to lubricate the bearing means;

at least three guy cables attached to the cable attaching means;

wind responsive means for causing said shaft to rotate in response to wind energy; and

a generator connected to said rotor shaft for producing electrical energy upon rotation of the turbine shaft by wind energy.

4,449,054

ELECTRONIC CIRCUIT FOR CONTROLLING THE SUPPLY VOLTAGE OF ELECTROMAGNETS, ELECTRIC MOTORS, RESISTORS, IN SINGLE- AND THREE-PHASE SYSTEMS

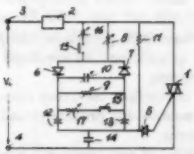
Fiorenzo Jop, Via Montebaldo, 29 - Carate Brianza, (Provincia di Milano), Italy

Filed May 10, 1982, Ser. No. 376,897

Claims priority, application Italy, May 18, 1981, 21764 A/81

Int. Cl.³ H03K *17/56*

U.S. Cl. 307—31 **1 Claim**



1. An electronic circuit for controlling the supply voltage of electromagnets, electric motors, electric resistances and the like, comprising a solid state controlled switch having a control electrode and series coupled between a supply source and the electric load, a solid state switch electrically coupled to the control electrode of said controlled switch and a phase shifting RC network electrically coupled to said solid state switch for switching on said solid state switch and triggering said solid state controlled switch, wherein said RC network includes resistor and capacitor elements effective to provide a fine adjusting of the on and off times of said controlled switch and cooperating in such a way as to allow for the load voltage to be accurately varied in a given broad range wherein said controlled switch is a silicon bilateral controlled switch or TRIAC and said solid state switch is a silicon bilateral switch or DIAC, characterized in that said RC network comprises a first diode and a second diode, a first variable resistor coupled between one end of the load and the coupling point of the cathode of said first diode and the anode of said second diode, said first variable resistor being effective to set the load maximum RMS voltage, a second variable resistor coupled between the cathode of said first diode and the anode of said second diode, said second variable resistor being effective to set the load minimum RMS voltage, a third and fourth variable resistors respectively coupled in parallel to said first and second variable resistors and cooperating therewith for finely adjusting said load maximum and minimum RMS voltage, a first variable capacitor coupled in parallel with said second variable resistor, a second and third capacitors having one respective end commonly coupled and the other two respectively coupled to the cathode of said first diode and to the anode of said second diode, a fourth capacitor coupled between the coupling common point of said second and third capacitors and the ground and a fixed resistor coupled between said end of said load and one end of said DIAC.

4,449,055

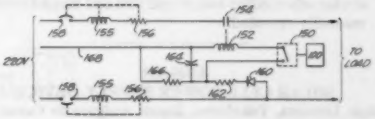
CIRCUIT BREAKER CONTROL DEVICE

Richard H. Greer, 5009 N. Fratus Dr., Temple City, Calif. 91780, and James B. Newport, 12772 Panorama Crest, Santa Ana, Calif. 92705

Continuation-in-part of Ser. No. 826,073, Aug. 19, 1977, abandoned. This application Jan. 8, 1979, Ser. No. 1,707

Int. Cl.³ H02J *4/00*

U.S. Cl. 307—38 **10 Claims**



1. A device for managing consumer demands for electricity comprising

means adapted for connection to a voltage supply,

means adapted for connection to a load,

energy storage means having a predetermined amount of energy stored therein,

impulse sensing means not requiring constant energization,

first switch means responsive to a command signal for connecting said energy storage means to said impulse sensing means for a predetermined period of time,

second switch means having two states and actuated by said impulse sensing means when said energy storage means is connected to said impulse sensing means for connecting said voltage supply to said load when said second switch means is in a first state and disconnecting said voltage supply from said load when said second switch means is in a second state.

4,449,056

POWER SUPPLY CONTROL SYSTEM OF AN INSTALLATION INCLUDING SEVERAL DEVICES HAVING ELECTRIC CIRCUITS

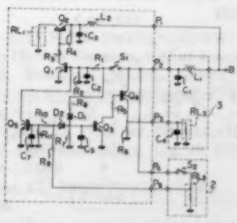
Shigeru Shibazaki, Kawagoe, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Sep. 24, 1981, Ser. No. 305,217

Claims priority, application Japan, Sep. 25, 1980, 55-136593[U]

Int. Cl.³ H01H *47/00*

U.S. Cl. 307—38 **7 Claims**



1. A power supply control system for supplying a source

voltage to load elements respectively contained in at least two signal source devices and at least one signal processing device for processing one of the output signals from at least one of said signal source devices, said control system comprising:

manually operated first switch means provided within a first of said signal source devices;

manually operated second switch means provided within a second of said the signal source devices for supplying said source voltage to the load elements of said second signal source device;

reset signal generating means connected to said manually operated second switch means for producing a reset signal when said second switch means is operated;

first switching circuit means for supplying said source voltage to said load elements of said first signal source device when said manually operated first switch means is operated, and being responsive to said reset signal to inhibit the source voltage applied to said first signal source device; and

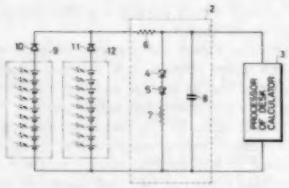
second switching circuit means for supplying said source voltage to said load elements of said signal processing device when either one of said first and second switches is manually operated.

4,449,057

SOLAR CELL POWER SUPPLY DEVICE

Junichi Ishiwata, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 23, 1982, Ser. No. 401,250
Int. Cl.³ H02J *1/10*
U.S. Cl. 307—43 **9 Claims**



1. A solar cell power supply device comprising:

a first solar cell having a determined spectral sensitivity characteristic;

a second solar cell having a different spectral sensitivity characteristic and connected in parallel to said first solar cell; and

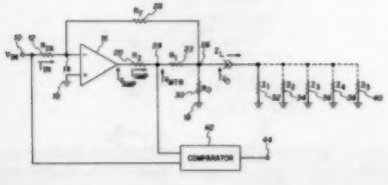
a voltage regulating circuit for stabilizing the output voltages from said first and second solar cells and supplying thus stabilized voltage to a load.

4,449,058

LOAD STATUS MONITORING APPARATUS

Daniel P. Feldmann, Melbourne, Fla., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Mar. 14, 1983, Ser. No. 474,855
Int. Cl.³ G01R *19/12, 27/02*
U.S. Cl. 307—152 **6 Claims**



5. Apparatus for monitoring the status of a load circuit connected to the output of a feedback stabilized driver amplifier circuit including circuit input means and circuit output means comprising, in combination:

first means for detecting the level of current input to the feedback stabilized driver amplifier circuit;

second means for detecting the level of current output by the amplifier portion of the feedback stabilized driver amplifier circuit;

third means, connected to said first and second means, for comparing the relative current levels detected; and

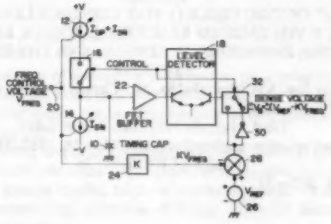
fourth means for outputting a signal from said third means, based upon the ratio obtained in the comparison by said third means, indicative of the status of the load circuit of said feedback stabilized driver amplifier circuit.

4,449,059

TRIANGLE WAVEFORM GENERATOR HAVING A LOOP DELAY COMPENSATION NETWORK

E. Jon Dickes, Hillsboro, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Jul. 13, 1981, Ser. No. 282,477
Int. Cl.³ H03K *4/08, 4/80*
U.S. Cl. 307—228 **7 Claims**



1. A triangle waveform generator, comprising:

(a) means for generating positive-slope and negative-slope ramp waveforms;

(b) means for controlling the ramp rates of said waveform;

(c) means for establishing predetermined amplitude limits of said waveforms;

(d) means coupled to said ramp rate control means and said amplitude-limit establishment means for generating sense voltages which are within said amplitude limits by a predetermined time related factor, wherein said means for generating sense voltages comprises at least one compensation network having a predetermined multiplication constant coupled between said ramp-rate control means and said amplitude-limit establishment means;

(e) means for detecting when said ramp waveforms reach said sense voltages and for generating control signals in response thereto; and

(f) means connected to said ramp waveform generating means and being responsive to said control signals for switching the polarity of slope of said ramp waveforms.

4,449,060

PRESET CIRCUIT FOR A CLOCKED FLIP-FLOP

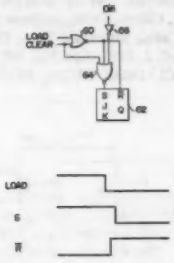
Takashi Totoki, Kawasaki, and Susumu Kawakami, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 23, 1982, Ser. No. 360,971
Claims priority, application Japan, Apr. 13, 1981, 56-55452
Int. Cl.³ H03K *19/003, 3/037, 17/30*
U.S. Cl. 307—247 R **6 Claims**

1. A preset circuit for a flip-flop having first and second preset terminals adapted to preset data "0" and "1", respectively, and having their priority levels different from each

other, in which either of data "0" and "1" is preset by the preset terminal of the higher priority level during a preset mode when both of said first and second preset terminals are enabled; and a normal mode operation is performed when both of said first and second preset terminals are disabled, said preset circuit comprising:

a signal terminal directly connected to the preset terminal of the lower priority level and supplied with a signal for setting the flip-flop to the preset mode;



a data terminal to which the preset data is supplied; and

gate means connected between said data terminal and the preset terminal of the higher priority level and also to said signal terminal so as to be controlled by the level of said signal thereat to thus assure phase lag of said preset mode setting signal to said preset terminal of the higher priority level.

4,449,061

WAVE-SHAPING CIRCUIT FOR DIGITAL SIGNAL

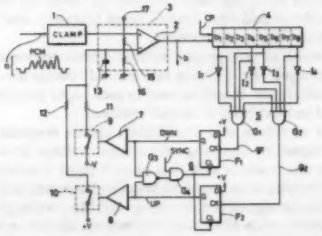
Nobuyuki Yasuda, and Kentaro Odaka, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jun. 15, 1981, Ser. No. 273,729

Claims priority, application Japan, Jun. 17, 1980, 55-82306

Int. Cl.³ H03K *5/08*

U.S. Cl. 307—268 **13 Claims**



1. A wave-shaping circuit for digital signal comprising:

(A) a slice circuit for slicing a time varying input signal at a predetermined threshold level, so as to produce a digital signal having high and low level portions;

(B) a detecting circuit for detecting the pulse widths of high and low level portions of the digital signal from said slice circuit during a predetermined period; and

(C) a control circuit which lowers the threshold level of said slice circuit when the pulse widths of the high level portion of the digital signal are less than a predetermined width, and raises the threshold level of said slice circuit when the pulse width of the low level portion of the digital signal is less than a predetermined width, and in which said detecting circuit includes an n-bit, where n is an integer larger than 1, shift register which successively shifts the output of said slice circuit in response to a shift clock signal, and a discriminating circuit for decoding the parallel outputs of said shift register.

4,449,062

SAFETY ARRANGEMENT FOR A POWERED TOOL OR IMPLEMENT

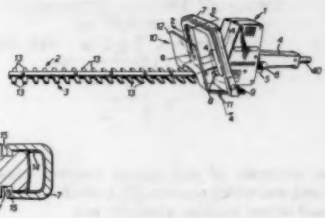
Peter H. Wilson, Stockton-on-Tees, England, assignor to Black & Decker Inc., Newark, Del.

Filed Sep. 15, 1981, Ser. No. 302,699

Claims priority, application United Kingdom, Sep. 15, 1980, 8029763

Int. Cl.³ H02H *5/08;* **A01H** *69/02*

U.S. Cl. 307—328 **14 Claims**



9. A hand-held power tool, comprising:

a housing;

an electric drive motor housed in said housing;

a main handle connected to said housing;

a main switch for controlling energisation of said motor, said main switch having a trigger for operation thereof mounted on said main handle;

a secondary handle connected to said housing, said secondary handle having an elongate channel therein;

a secondary control system of pneumatic form which must be actuated before said motor can be energised;

said secondary control system comprising an elongate flexible-walled air sac and a secondary switch responsive to deformation of said air sac, said air sac being disposed in said channel;

said secondary switch being located in said housing and said air sac being made of electrically-insulating material;

an elongate actuating member engaged in said channel and disposed over said air sac, said actuating member partly protruding from said channel and being manually depressable into said channel to deform said air sac and increase the pressure therein to actuate said secondary switch; and

said channel having inturned lips which retain said actuating member in said channel;

whereby to energise said motor an operator must hold said main handle and actuate said trigger with one hand, and grasp the secondary handle and depress said actuating member with the other hand, release of either said trigger or said actuating member effecting deenergisation of said motor.

4,449,063

LOGIC CIRCUIT WITH IMPROVED SWITCHING

Hitoshi Ohmichi; Hiromu Enomoto, both of Kawasaki; Yasushi Yasuda, Inagi; Yoshiharu Mitono, Tokyo, and Taketo Imaizumi, Fukuoka, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 22, 1980, Ser. No. 180,452

Claims priority, application Japan, Aug. 29, 1979, 54-110074; Aug. 29, 1979, 54-110075

Int. Cl.³ H03K *19/013, 19/088*

U.S. Cl. 307—456 **6 Claims**

1. A fundamental logic circuit for performing a fundamental logic operation comprising:

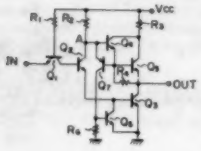
input means for receiving an input signal:

a driver transistor having a base electrode connected to said input means and having emitter and collector electrodes producing output signals;

an output emitter follower transistor which is driven by the output signal from the collector electrode of said driver transistor;

an output inverter transistor having a base electrode which is driven by the output signal from the emitter electrode of said driver transistor and which comprises a totem-pole output stage together with said output emitter follower transistor;

a first switching transistor which is connected between the



base electrode of said output inverter transistor and ground, and which removes any base charge from the base of said output inverter transistor; and

a second switching transistor whose collector is connected to the base electrode of said first switching transistor and whose emitter electrode and base electrode are connected between two nodes of said fundamental logic circuit, the potential difference between said two nodes increasing only during a transient period in which said output inverter transistor changes from the turned on condition to the turned off condition, and said first and second switching transistors being turned on temporarily in said transient period.

4,449,064

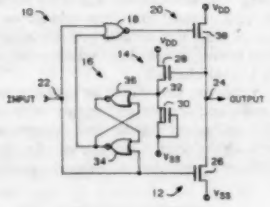
THREE STATE OUTPUT CIRCUIT

Kim Eckert; Richard D. Crisp, and Lam Ta, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 2, 1981, Ser. No. 250,522

Int. Cl.[3] H03K *19/094, 19/017*

U.S. Cl. 307—473 **9 Claims**



1. A three state output circuit comprising:

active pull down means coupled to an input node and an output node, for coupling the output node to a first supply voltage in response to an assert signal having a first predetermined voltage level;

threshold detection means coupled to the output node, for providing a reset signal in response to the voltage on the output node exceeding a predetermined threshold voltage;

latch means coupled to the input node and the threshold detection means, for providing an enable signal in response to said assert signal, and, in the absence of said assert signal, terminating said enable signal in response to said reset signal;

gate means coupled to the input node and the latch means, for passing a rescind signal having a second predetermined voltage level in response to the coincidence of said rescind signal and said enable signal; and

active pull up means coupled to the gate means and the output node, for coupling the output node to a second supply voltage in response to said rescind signal passed by the gate means.

4,449,065

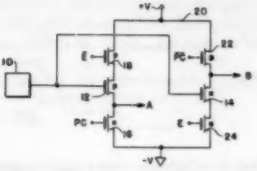
TRI-LEVEL INPUT BUFFER

Thomas J. Davies, Jr., Gilroy, Calif., assignor to Fairchild Camera & Instrument Corp., Mountain View, Calif.

Filed Oct. 2, 1981, Ser. No. 308,070

Int. Cl.[3] H03K *19/096, 19/20*

U.S. Cl. 307—473 **13 Claims**



1. A dynamic input buffer for generating three binary output signals in response to input signals of differing voltage levels, said buffer comprising:

first and second branch circuits, said first branch circuit having a p-channel field effect input transistor and said second branch circuit having an n-channel field effect input transistor, said first and second branch circuits being parallel-connected between a first voltage supply terminal having a first voltage level and a second voltage supply terminal having a second more positive voltage level and having an output terminal, and each of said branch circuits having the same input terminal for receiving an input signal at the respective gate electrodes of said input transistors;

a first switch in said first branch circuit responsive to a first signal for applying said first voltage level to the drain electrode of said first branch input transistor and to said first branch output terminal;

a first switch in said second branch circuit responsive to a second signal for applying said second voltage level to the drain electrode of said second branch input transistor and to said second branch output terminal;

a second switch in said first branch circuit responsive to a third signal for applying said second voltage level to the source electrode of said first branch input transistor; and

a second switch in said second branch circuit and responsive to a fourth signal for applying said first voltage to the source electrode of said second branch circuit input transistor.

4,449,066

BUFFER CIRCUIT FOR GENERATING OUTPUT SIGNALS HAVING SHORT RECOVERY TIME

Keizo Aoyama, Yamato, and Takahiko Yamauchi, Kawasaki, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 16, 1981, Ser. No. 331,287

Claims priority, application Japan, Dec. 24, 1980, 55-183076

Int. Cl.[3] H03K *19/017, 19/094, 17/10*

U.S. Cl. 307—482 **12 Claims**

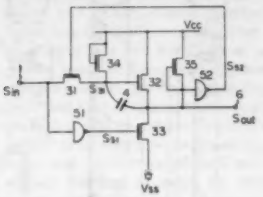
1. A buffer circuit operatively connectable to a voltage source and operatively connected to receive an input signal, comprising:

a capacitor;

a first FET transistor having one of a source or drain which receives the input signal;

a second FET transistor for performing a bootstrap function, having a source operatively connected to one terminal of said capacitor, having a gate operatively connected to the other of the drain or source of said first FET transistor, and the other terminal of said capacitor and having a drain operatively connected to the voltage source;

a third FET transistor having a source or drain operatively connected in series with the source of said second FET transistor at an output point, and having a gate for receiving a signal which has an inverse phase of the phase of the input signal and which is slightly delayed from the input signal, and having the other of the source or drain connected to a reference voltage; and



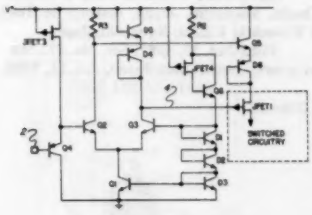
an inverter operatively connected to the output point at which said second and third FET transistors are connected in series, said inverter inverting the potential at the output point and supplying the inverted potential to the gate of said first FET transistor.

4,449,067

LOW POWER, PROCESS AND TEMPERATURE INSENSITIVE FET BIAS CIRCUIT

Yukio Nishikawa, Los Gatos, assignor to Precision Monolithics, Inc., Santa Clara, Calif.

Filed Aug. 6, 1981, Ser. No. 290,432
Int. Cl.³ H03K *17/14, 17/687*
U.S. Cl. 307—570 **10 Claims**



1. A lower power, process and temperature insensitive circuit for a switch FET, said switch FET having a gate, source and drain and characterized by a pinch-off voltage which is subject to processing and temperature variations, comprising:

a bus for receiving a voltage potential from a voltage source,

first and second resistors having a predetermined resistance ratio and each connected to the bus,

first circuit means connected with respect to the bus to generate a voltage across the first resistor which is proportional to the switch FET pinch-off voltage, and thereby drive a current proportional to the pinch-off voltage through the first resistor,

current reflection means connected to receive current from the first resistor and to drive a current through the second resistor which is proportional to the current through the first resistor, and thereby generate a voltage across the second resistor which is proportional to the pinch-off voltage,

switch control means controlling the application of current to the second resistor, and

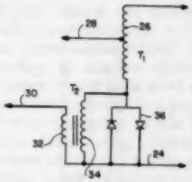
second circuit means connecting the bus and one end of the second resistor in circuit with the switch FET gate, and the other end of the second resistor with the switch FET source to impose a voltage across the gate-source terminals of the switch FET which is controlled by the current through the second resistor and is at least equal to the pinch-off voltage when said proportional currents flow through the first and second resistors.

4,449,068

SONAR COMPENSATION TRANSFORMER

Leopold J. Johnson, Valley Center, and David L. Carson, San Diego, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 22, 1983, Ser. No. 534,901
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—316 **2 Claims**



1. An improved sonar transceiver made up of a tapped transformer in series with a diode switch wherein the connection to the transducer is from the terminals bounding the transformer winding and series connected diode switch, and connections to the transmitter is between a preselected terminal tap into the transformer winding and the bounding terminal at the opposite end of the diode switch, said improvement comprising:

means connected in parallel with said diode switch for inducing a controlled magnetic field dependent upon the acoustical signal received by the transducer; and

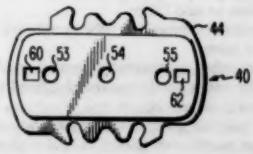
means connected in the line to the transceiver which connects from the bounding terminal at the opposite end of the diode switch for inductively receiving the magnetic field created by the inducing means, said receiving means being preadjusted to control the output voltage of the signal from the transducer which is being transmitted to the transceiver for processing.

4,449,069

COLOR PICTURE TUBE WITH FOCUSING ELECTRODE HAVING ELECTROSTATIC FIELD DISTORTION APERTURE THEREIN

Naim Z. Assil, and Richard H. Hughes, both of Lancaster, Pa., assignors to RCA Corporation, New York, N.Y.

Filed Feb. 10, 1982, Ser. No. 347,526
Int. Cl.³ H01J *29/51*
U.S. Cl. 313—412 **4 Claims**



1. In a color picture tube having an inline electron gun including at least a focusing electrode and a screen grid elec-

trode, said electrodes including a plurality of inline apertures in portions facing each other, the improvement comprising

the portion of said focusing electrode facing said screen grid electrode including an additional aperture which is spaced sufficiently close to and outward from an offaxis aperture of the plurality of inline apertures therein to cause a distortion of an electrostatic field formed between said focusing electrode and said screen grid electrode at the offaxis aperture.

4,449,070

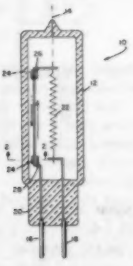
TUNGSTEN-HALOGEN LAMP WITH VARIABLY POSITIONABLE GETTER

John W. Shaffer, Williamsport, and Gary L. Houseknecht, Hughesville, both of Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Apr. 28, 1982, Ser. No. 372,518

Int. Cl.³ H01K *1/56*

U.S. Cl. 313—557 **3 Claims**



1. A tungsten-halogen incandescent lamp comprising: a light transmitting, hermetically sealed glass envelope having a longitudinal axis; a long lead-in wire and a short lead-in wire sealed in a press of said envelope and extending internally and externally of said envelope; a tungsten filament attached between the internal ends of said lead-in wires; a fill gas within said envelope comprising an inert gas and a halogen; and a copper getter slidably mounted within said envelope.

4,449,071

FLUORESCENT LAMP DEVICE

Nobuo Yokoyama, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation of Ser. No. 239,466, Mar. 2, 1981, abandoned. This application Dec. 23, 1982, Ser. No. 452,458

Claims priority, application Japan, Mar. 13, 1980, 55-31850; Mar. 13, 1980, 55-31851

Int. Cl.³ H01J *7/44*

U.S. Cl. 315—53 **7 Claims**

1. A fluorescent lamp device comprising:

a cylindrical outer tube;

a fluorescent lamp, having two ends including a base at each end thereof, disposed in said outer tube, each of said bases including a pair of electrodes for making electrical connection to said lamp;

a cylindrical connection tube connected to one end of the outer tube;

a cap member, containing a parallel combination of a glow starter and a condenser therein, fixed to the other end of the said outer tube;

a base member fixed to said connection tube;

a ballast member contained in said base member,

said ballast comprising,

a spring,

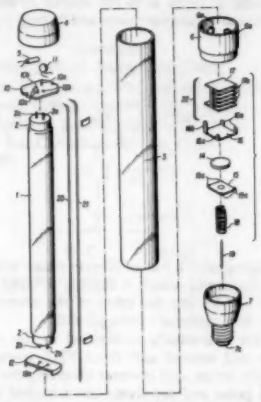
a first conductive plate pressed against by said spring,

a thermistor,

a second conductive plate, said thermistor disposed between said first and second conductive plates,

a thermal adjustment member;

wherein said thermistor and said thermal adjustment member are thermally and electrically connected through said second conductive plate;



said parallel combination of said glow starter and said condenser connected in series circuit with said pairs of electrodes and said thermistor; and

a pair of conductors coupled from said one end of said lamp and from said base member to the other end of said lamp and to said parallel combination of said glow starter and said condenser to complete said series circuit.

4,449,072

COMPACT FLUORESCENT LAMP

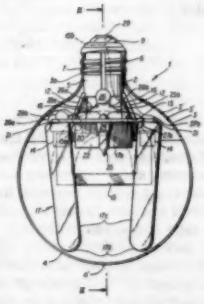
Kimio Osada, Yokosuka, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jun. 10, 1981, Ser. No. 272,388

Claims priority, application Japan, Jul. 11, 1980, 55-94723

Int. Cl.³ H01J *7/44*

U.S. Cl. 315—58 **7 Claims**



1. A compact fluorescent lamp comprising:

a screw base;

a unitary chassis member having a cylindrical part, and a holder member, said screw base secured to said cylinder part;

a base member, having an upper opening and a lower opening, said base member being attached to said cylindrical part so as to cover said chassis member;

a winding envelope attached to said holder member and

formed by bending a straight glass tube into a U-shape, thereby forming a first bent part and a pair of first leg parts, and bending each of said first leg parts into a second U-shape, thereby forming a pair of second bent parts and two pairs of second leg parts;

a ballast mounted to said holder member of said chassis member;

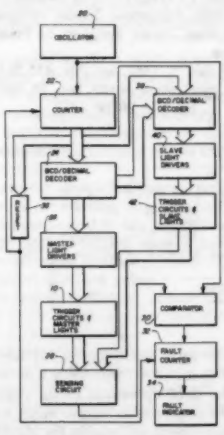
said holder member of said unitary chassis member for substantially supporting the weight of said winding envelope and said ballast, said unitary chassis member further including a hook arm member extending from said holder member for holding said first bent part of said winding envelope, at least a pair of fixing wall members extending from said holder member for fixing said ballast to said holder member and for providing resistance to the radiant effect of the ballast and to external oscillations, at least first and second heat shield plates extending from said holder member and positioned between said ballast and the ends of said winding envelope for preventing the radiant heat of said ballast from impinging upon said winding envelope, and a holder plate extending from said holder member for holding said ends of said winding envelope; and

a globe member forming a semi-sphere attached to said base member.

4,449,073
RUNWAY APPROACH LIGHTING SYSTEM WITH FAULT MONITOR

Michael A. Mongoven, Oak Park; Paul R. Bees, Elmhurst, and David C. Earl, Naperville, all of Ill., assignors to Multi Electric Mfg. Inc., Chicago, Ill.

Filed Jun. 14, 1982, Ser. No. 388,120
Int. Cl.³ H05B 37/03
U.S. Cl. 315—130 **21 Claims**



1. A system for individually energizing each of a plurality of output devices including means for providing a fault indication when a preselected number of the output devices are inoperative, comprising:

means coupled to the output devices for generating trigger signals to individually energize each output device;

means coupled to the output devices for sensing the output of each output device to develop monitoring signals;

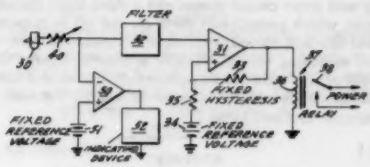
means for comparing the trigger signals with the monitoring signals to develop status signals representing the operative status of each output device; and

means for generating a fault indication in response to the status signals when at least the preselected number of output devices are inoperative.

4,449,074
EXCESS LIGHT TURN-OFF CIRCUIT

David G. Luchaco, Macungie, Pa., assignor to Lutron Electronics Co., Inc., Coopersburg, Pa.

Filed Feb. 23, 1983, Ser. No. 468,870
Int. Cl.³ H05B 37/02
U.S. Cl. 315—159 **16 Claims**

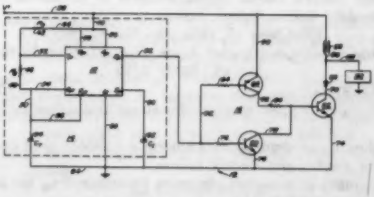


1. An excess light turn-off circuit for interior spaces which are provided with both natural and artificial lighting; said excess light turn-off circuit including: a light level sensor which produces an output signal related to the light level which impinges thereon; an adaptive electrical filter circuit connected to the output of said light level sensor, said filter producing an output which changes in a predetermined manner to a new level when the output of said light level sensor changes; a comparator circuit having a first input connected to the output of said filter circuit and having a second input; a fixed reference voltage circuit connected to said second input of said comparator circuit; said comparator circuit having an output which switches from a first level to a second level when the voltage at its said first input reaches a first given value relative to said fixed reference voltage circuit at its said second input; the ratio of said first given value and said fixed reference voltage circuit having a value which changes with the initial steady state input to said filter circuit; and relay switching means connected to control said artificial lighting in accordance with available natural light in order to conserve energy; said comparator circuit output connected to said relay switching means and operating said relay switching means to turn said artificial lighting on and off when said comparator circuit output switches between its said first and second levels.

4,449,075
ELECTROLUMINESCENT LAMP DRIVER

Anthony D'Onofrio, West Hartford, and Jack Gunzy, Bethel, both of Conn., assignors to Timex Corporation, Waterbury, Conn.

Filed Sep. 13, 1982, Ser. No. 417,779
Int. Cl.³ H05B 33/08
U.S. Cl. 315—169.3 **8 Claims**



1. A driver circuit for driving an electroluminescent lamp including voltage power supply means and an inductor electrically connected to said lamp, said driver circuit comprising:

(a) timer circuit means for periodically producing a LOW level voltage signal lower in magnitude than a predetermined threshold voltage level in response to a HIGH level voltage signal provided by said power supply means greater in magnitude than a predetermined control voltage level and for periodically producing a HIGH level

voltage signal in response to a LOW level voltage signal, and

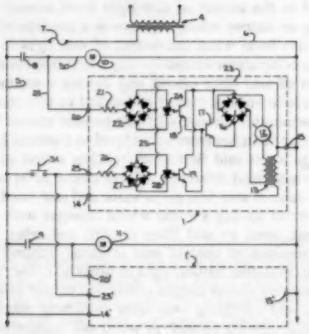
(b) logic circuit means including a first logic circuit element for controlling the magnitude of the operating voltage produced by said voltage power supply means that drives said logic circuit means, a second logic circuit element which periodically turns off and on in response to said HIGH and LOW voltage signals periodically produced by said timer circuit means and a third logic circuit element which periodically turns on and off in response to said first and second logic circuit elements for providing the switching for periodically producing energy in the field of said inductor to periodically excite said lamp to luminesce due to interchange of energy between said inductor and said lamp.

4,449,076

LIGHT ISOLATED PILOT LIGHT

Enoch P. Smith, Greendale, Wis., assignor to Allen-Bradley Company, Milwaukee, Wis.

Filed Mar. 18, 1982, Ser. No. 359,267
Int. Cl.³ H05B *37/00*
U.S. Cl. 315—312 **6 Claims**



1. In a pilot light the combination comprising:
a signal circuit having a light emitter;
a test circuit having a light emitter; and
a lamp circuit with light responsive means in light receiving relation to said light emitters that causes lamp circuit conduction.

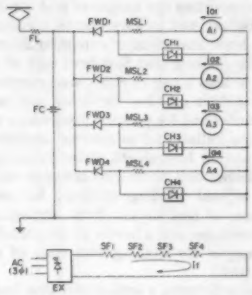
4,449,077

CHOPPER CONTROL EQUIPMENT FOR ELECTRIC RAILCARS

Masashi Naruto, Osaka, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 13, 1982, Ser. No. 377,995
Claims priority, application Japan, May 27, 1981, 56-80555
Int. Cl.³ H02P *5/50*
U.S. Cl. 318—6 **3 Claims**

1. A chopper control system for an electric railcar comprising:
a plurality of shunt motors having a common field current for driving said electric railcar;
a plurality of armature choppers for controlling the armatures of said shunt motors;
a multiplier for multiplying a maximum value of the armature currents of said plurality of shunt motors by said field current of said plurality of shunt motors;
a shunt field controller for comparing an output of said multiplier with a preset desired instructed braking force value so as to control said field current of said plurality of shunt motors in response to said comparison;
a maximum-value detector for each of said plurality of shunt motors for comparing armature currents of said plurality of shunt motors other than its respective shunt motor with a reference instruction value of armature current so as to produce a signal corresponding to a maximum value of said comparison; and
an armature controller for each of said plurality of shunt motors for providing a signal corresponding to a maximum value consisting of the armature current of its respective shunt and said signal of maximum value from its respective maximum value detector; wherein said armature controller signal is used to control said armature current of its respective shunt motor that is to be controlled.

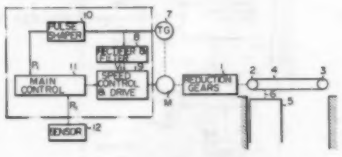


4,449,078

APPARATUS FOR PROVIDING AN OPTIMAL OPENING AND CLOSING OF A DOOR

Masaaki Ogishi; Isao Hagiwara; Yukio Yoshida, and Kenzo Oono, all of Toyama, Japan, assignors to Yoshida Kogyo K. K., Tokyo, Japan

Filed Sep. 7, 1982, Ser. No. 415,707
Claims priority, application Japan, Sep. 28, 1981, 56-151966
Int. Cl.³ H02P *1/58*
U.S. Cl. 318—102 **10 Claims**



1. In an apparatus for controlling the operation of an automatic door including means for providing a deceleration point associated with the door operation, means coupled with the door for driving the door, means for providing a speed control of said door driving means, and means for electrically obtaining the current position of the door, the improvement comprising:
means for comparing said current position of the door with said deceleration point to generate a low speed command upon the coincidence of said current position with said deceleration point so that said speed control means will decelerate the door toward a low speed in response to the generation of said low speed command;
means for measuring a variable run-length of the door which is subject to variations in the mechanical condition of the door;
means for setting a predetermined low speed run-length of the door; and
means for correcting said deceleration point by utilizing the

measured run-length and the predetermined low speed run-length.

4,449,079

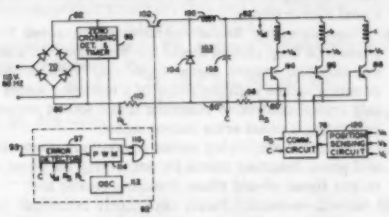
CONTROL SYSTEM FOR AN ELECTRONICALLY COMMUTATED MOTOR

David M. Erdman, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Continuation of Ser. No. 141,267, Apr. 17, 1980, which is a continuation-in-part of Ser. No. 77,656, Sep. 21, 1979, abandoned, which is a continuation-in-part of Ser. No. 802,484, Jun. 1, 1977, Pat. No. 4,169,990, said Ser. No. 802,484, is a continuation-in-part of Ser. No. 729,761, Oct. 5, 1976, abandoned, said Ser. No. 729,761, is a continuation-in-part of Ser. No. 482,409, Jun. 24, 1974, Pat. No. 4,005,347. This application Aug. 27, 1982, Ser. No. 412,421

Int. Cl.³ H02P 1/02

U.S. Cl. 318—138 **10 Claims**



1. A system for controlling the energization of an electronically commutated motor having a stationary assembly with a plurality of winding stages and also having a rotatable assembly associated in magnetic coupling relation with the stationary assembly upon the energization of the motor, the system comprising:

means responsive to the angular position of the rotatable assembly for providing commutation signals;

a plurality of commutation switching means for connection with the winding stages, respectively;

means for applying the commutation signals in sequence to said commutation switching means to control the conductivity thereof;

circuit means for dissipating energy generated by the commutation of the winding stages and including a first common point connected to one terminal of each of the winding stages, and first diode means for separate connection between the other terminal of each of the winding stages and a second common point;

said commutation switching means being connected between a third common point and the other terminal of each of the winding stages;

an energy return circuit including capacitor means for connection between said first and second common points;

first impedance means, first transistor means and second diode means for connection in series combination between said first and second common points;

voltage divider means and second transistor means for connection in series combination substantially between said second and third common points, said voltage divider means including second and third impedance means for connection at a fourth common point;

means responsive to the voltage at said fourth common point for controlling the conductivity of said first transistor means;

means for deriving a control signal representative of the actual angular velocity of the rotatable assembly; and

means for applying the control signal to said second transistor means to decrease the conductivity thereof whenever the actual angular velocity of the rotatable assembly exceeds an externally determined variable limit with the decreased conductivity of said secnd transistor means being effective to increase the conductivity of said first transistor means and whereby energy generated upon the commutation of the winding stages is stored in said capacitor means for subsequent dissipation and a negtive torque is variably applied to the rotatable assembly in proportion to the amount by which the actual velocity exceeds the variable limit.

4,449,080

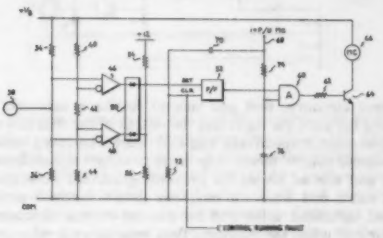
ELECTRIC VEHICLE PROTECTION SCHEME

Charles E. Konrad, Roanoke, and Robert C. Clark, deceased, late of Charlottesville, Va. (by Jean B. Clark, executrix), assignors to General Electric Company, Charlottesville, Va.

Filed May 27, 1982, Ser. No. 382,477

Int. Cl.³ H02P 5/16

U.S. Cl. 318—139 **3 Claims**



1. A fault detection and inhibit circuit for a power control unit in an electric traction motor propelled vehicle, the control unit including a chopper circuit for regulating power to the motor and a bypass contactor for shunting the chopper circuit when the percent conduction time of the chopper circuit exceeds a predetermined value, and a main contactor for connecting the motor, the chopper circuit and a power source in a series current path, comprising;

(a) a first voltage divider connected in parallel with the power source;

(b) means for connecting an intermediate point of said first voltage divider to a point intermediate the main contactor and the bypass contactor;

(c) means for comparing the voltage at said intermediate point of said first voltage divider to a predetermined range of voltage values; and

(d) means for inhibiting the operation of the main contactor when said intermediate point voltage is outside said predetermined range of voltage values.

4,449,081

COMPENSATING OUTPUTS OF HALL GENERATORS TO MINIMIZE EFFECTS OF TEMPERATURE VARIATION AND THE LIKE

Benno Doemen, St. Georgen, Fed. Rep. of Germany, assignor to Papst Motoren KG, St. Georgen, Fed. Rep. of Germany

Continuation of Ser. No. 175,194, Jul. 31, 1980, abandoned. This application Jan. 10, 1983, Ser. No. 456,752

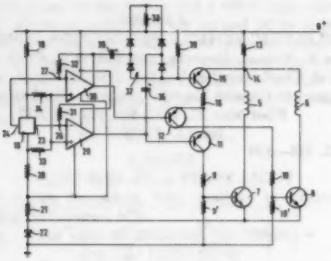
Claims priority, application Fed. Rep. of Germany, Aug. 4, 1979, 2931686

Int. Cl.³ H02P 5/06

U.S. Cl. 318—254 **6 Claims**

1. In an electronic power supply for a commutatorless DC motor which includes a permanently magnetized rotor for generating a magnetic field, a stator winding arrangement comprising at least one stator coil positioned in torque-producing arrangement consisting of a single stationary Hall generator disposed in magnetic field sensing relation to said rotor so as to develop first and second voltage output signals at first and second output terminals thereof, and control circuitry con-

nected to said output terminals for energizing and deenergizing said at least one stator coil in response to rotor position, the improvement comprising first and second amplifier stages each having an input and an output, the first stage having its input connected to the first output terminal and the second stage having its input connected to the second output terminal, the outputs of said first and second stages being connected to the



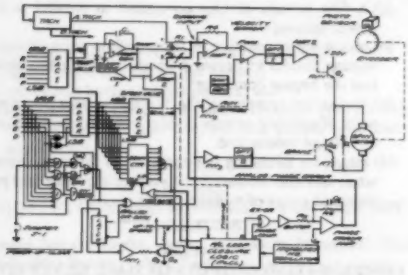
control circuitry, first and second feedback networks connected between the input and the output of the first and of the second stage, respectively, and said control circuitry including non-linear control means responsive to output signals from said first and second stages for preventing current flow through said stator coil when the magnetic field is below a predetermined threshold value and for passing current through said stator coil when the magnetic field exceeds said value.

4,449,082

MOTOR SPEED CONTROL SYSTEM

Douglas G. Webster, 14450 Blackwalnut Ct., Saratoga, Calif. 95070

Filed Dec. 17, 1981, Ser. No. 331,873
Int. Cl.³ G05B *5/00*
U.S. Cl. 318—326 **4 Claims**



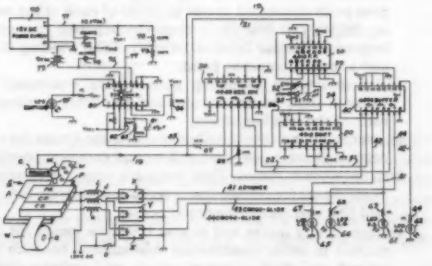
1. A system for controlling the speed of a motor comprising:
(a) a first system input terminal for receiving a first digital number representative of a desired acceleration characteristic for said motor;
(b) a second system input terminal for receiving a second digital number representative of a desired speed for said motor;
(c) a first digital to analog converting means operatively connected to said first system input terminal;
(d) a second digital to analog converting means operatively connected to said second system input terminal;
(e) a ramp generating means operatively connected to said first digital to analog converting means via a resistance means and operatively connected to said second digital to analog converting means via a comparator network means;
(f) a velocity error summing amplifier means having a first, second, and third input terminal, the output of said ramp generating means operatively connected to the first input terminal of said velocity error summing amplifier means;
(g) a pulse width modulating means operatively connected between said velocity error summing amplifier means and said motor;
(h) encoding means connected to said motor;
(i) sensing means associated with said encoding means;
(j) tachometer means operatively connected to said sensing means, said tachometer means having an analog output terminal and a digital output terminal, said analog output terminal connected to the second input terminal of said velocity error summing amplifier means;
(k) variable-modulo counting means operatively connected to said second system input terminal and including clocking means operatively connected to the digital output terminal of said tachometer means;
(l) decoding means operatively connected to said variable-modulo counting means;
(m) phase lock loop closing means operatively connected to said decoding means and to a crystal-controlled reference signal source means;
(n) phase detecting means operatively connected to said phase lock loop closing means for comparing the phase of the decoded output signal from said variable-modulo counting means with the phase of a reference signal from said crystal-controlled reference signal source means and generating a phase error output signal;
(o) phase error amplifying means operatively connected to said phase detecting means for amplifying the phase error output signal of said phase detecting means; and
(p) variable resistance means operatively connected to the output of said phase error amplifying means and to the third input terminal of said velocity error summing amplifier means for controllably coupling said amplified phase error output signal to said velocity error summing amplifier means thereby effecting precise phase lock velocity control of the speed of said motor.

4,449,083

STAGGER FEED CONTROL CIRCUIT

Charles D. Beall, Tallahassee, Fla., assignor to Wayne H. Coloney Co., Inc., Tallahassee, Fla.

Filed Jun. 21, 1982, Ser. No. 390,615
Int. Cl.³ G05B *19/28*
U.S. Cl. 318—602 **9 Claims**



1. A control system for feeding strip material to a cyclic stamping machine synchronously with the cycle thereof, the machine having longitudinal strip-incrementing actuator means and having transverse strip-shifting actuator means for shifting the strip laterally to permit stamping the strip in a repeating pattern having multiple different longitudinal rows, the control system comprising:
sensor means operative to sense each cycle of the machine and deliver a synchronizing signal in response thereto;
multiple buffer means operative in response to sequential pulses to deliver a drive signal to said incrementing actua-

tor means to shift the strip longitudinally, and to deliver a drive signal to an associated one of said shifting actuator means to shift the strip transversely to another of said rows; and

sequential pulse generating means having different outputs respectively connected to different buffer means and operative in response to said synchronizing signals to deliver a repeating sequence of pulses determining said pattern to different ones of said outputs and associated buffer means in a repeating sequence.

4,449,084

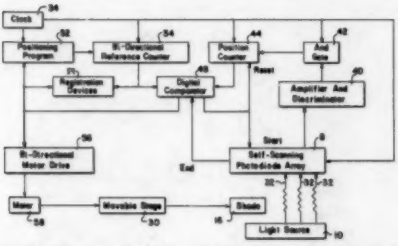
POSITIONING SERVO-MECHANISM OR TACHOMETER EMPLOYING SELF-SCANNING LIGHT SENSING ARRAY

Frank Meno, Pittsburgh, Pa., assignor to University of Pittsburgh, Pittsburgh, Pa.

Filed Dec. 28, 1981, Ser. No. 334,965

Int. Cl.³ G05B *1/06*

U.S. Cl. 318—640 **10 Claims**



1. Apparatus for precise positioning of a movable stage at one of a number of predetermined positions comprising

light source means,

a self-scanning array of photodiodes including a plurality of said photodiodes positioned to receive light from said light source means and adapted to emit a responsive electrical signal proportional to the number of photodiodes receiving said light,

opaque shade means for movement responsive to movement of said stage,

said shade means being mounted for reciprocating movement between said light source means and said self-scanning array of photodiodes,

motor means for effecting movement of said shade means,

electronic means for receiving said electrical signals from said self-scanning array of photodiodes and comparing such signals with a said predetermined position,

said self-scanning array of photodiodes is a linear array,

said shade means being adapted for relative longitudinal reciprocating movement with respect to said self-scanning linear array of photodiodes, whereby movement of said shade means in a first direction will sequentially increase the number of said photodiodes receiving said light and movement of said shade means in a second direction will sequentially reduce the number of said photodiodes receiving said light, and

said electronic means having means for emitting a signal to said motor means to effect corrective movement of said stage if said comparison indicates that said stage is not in the desired predetermined position.

4,449,085

CONTROL FOR OPERATION OF A MACHINE TOOL

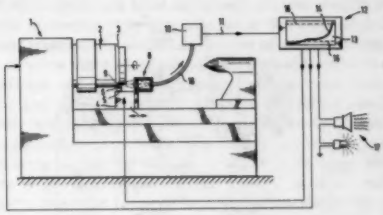
Volker Gomoll, Wernau, Fed. Rep. of Germany, assignor to Feldmühle Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany

Filed Nov. 9, 1981, Ser. No. 319,615

Claims priority, application Fed. Rep. of Germany, Nov. 8, 1980, 3042211

Int. Cl.³ G05D *23/00*

U.S. Cl. 318—641 **8 Claims**



1. Method of monitoring the tool bit in a machine tool during the processing of a workpiece comprising the steps of measuring the temperature of the processed surface of the workpiece, feeding the measured temperature to an evaluation device, checking the measured temperature and terminating the processing operation on the occurence of one of a sudden increase in the measured temperature and a rise of the measured temperature above a given level, measuring the temperature by arranging an optical element with a measurement spot directed at the surface to be measured, collecting the infra-red radiation from the measurement spot and transferring the radiation to a thermal sensor, reading the temperature indicated by the infra-red radiation in the thermal sensor and passing the temperature on to an evaluating device and determining in the evaluating device when there is a sudden temperature increase or the rise in the measured temperature is above a given level.

4,449,086

METHOD AND APPARATUS FOR CONTROLLING AND REGULATING A MOTOR WITH A PERMANENT MAGNETIC ROTOR

Harald Hoffmann, Konigstein, and Dan-Corneliu Raducanu, Bad Soden, both of Fed. Rep. of Germany, assignors to Braun Aktiengesellschaft, Kronberg, Fed. Rep. of Germany

Filed Dec. 8, 1980, Ser. No. 213,785

Claims priority, application Fed. Rep. of Germany, Apr. 8, 1980, 3013473

Int. Cl.³ H02K *29/04*

U.S. Cl. 318—696 **13 Claims**

1. A control circuit for driving an electric motor at a substantially constant desired rotational speed and for accelerating said motor after a stoppage thereof or the application of an adverse resistive torque thereto, said motor including a rotor having at least one pair of permanent magnetic poles and a stator provided with a first and a second coil, said control circuit comprising:

control means for detecting the rotational speed of said rotor and for supplying energizing pulses to said first or said second coil dependent upon said detected speed, said control means having at least two modes:

a normal speed mode wherein the rotational speed of said rotor is detected by said first coil and wherein only said second coil is supplied with said energizing pulses at a frequency substantially corresponding to single coil driving of said rotor at said desired rotational speed; and

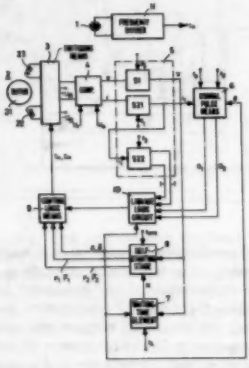
a self-starting mode wherein said energizing pulses are supplied alternately to said first and said second coil to accelerate said rotor to said desired rotational speed;

said control means including rotor acceleration and braking means, operable during said normal speed mode and comprising:

means for generating desired frequency pulses of a predetermined width and phase;

means for generating actual frequency pulses of a width and phase indicative, respectively, of the rotational speed and angular disposition of said rotor;

means for comparing the widths and phases of said desired and said actual frequency pulses; and



accelerating and braking pulse generating means for generating energizing pulses which exert an accelerating force on said rotor whenever the phase of said actual frequency pulses leads the phase of said desired frequency pulses and for generating braking pulses which exert a braking force upon said rotor by effecting a short circuiting of one of said coils whenever the phase of said actual frequency pulses leads the phase of said desired frequency pulses.

4,449,087

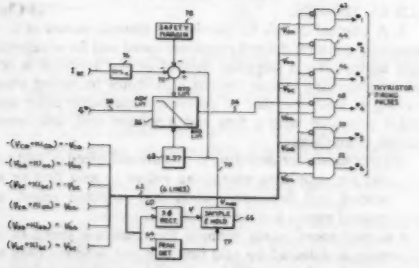
FLUX FEEDBACK FIRING CONTROL FOR A LOAD COMMUTATED INVERTER

David L. Lippitt, Schenectady, N.Y.; Paul M. Espelage, Salem, Va.; Leland C. Tupper, Schenectady, N.Y.; Loren H. Walker, and Herbert W. Weiss, both of Salem, Va., assignors to General Electric Company, Salem, Va.

Filed Dec. 23, 1981, Ser. No. 333,933

Int. Cl.³ H02P *5/40*

U.S. Cl. 318—723 **30 Claims**



1. A method of generating a firing control signal for controlling current commutation of a set of thyristors included in an electrical power converter coupled to a polyphase AC power line, comprising the steps of:

(a) deriving at least one voltage signal representing the line-to-line voltage on said AC power line;

(b) generating a pseudo flux signal waveform from said voltage signal;

(c) determining the peak value of at least one pseudo flux signal waveform;

(d) determining a value, in terms of the units of the pseudo flux signal waveform, necessary to effect thyristor current commutation in said thyristors;

(e) determining a difference value between said peak value and said value necessary to effect commutation;

(f) determining a thyristor firing angle from said difference value and generating said firing control signal therefrom; and

(g) applying said firing control signal to firing circuitry for selectively firing at least one of the thyristors prior to the peak of the forthcoming pseudo flux signal waveform.

4,449,088

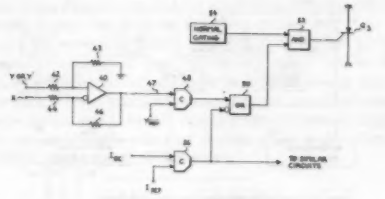
COMMUTATION FAILURE CORRECTION SCHEME FOR A CONTROLLED CURRENT INVERTER

John H. Cutler, Roanoke, Va.; John D. D'Atre, Saratoga, N.Y., and Loren H. Walker, Salem, Va., assignors to General Electric Company, Salem, Va.

Filed Dec. 23, 1981, Ser. No. 333,930

Int. Cl.³ H02M *1/06;* **H02P** *13/24*

U.S. Cl. 318—798 **7 Claims**



1. For use in conjunction in a controlled inverter bridge of the type having a plurality of legs each having a controlled rectifier and further including an associated commutating capacitor across which an electrical voltage is developed to effect thyristor conduction commutation to thereby transfer current from one controlled rectifier to another through the sequential rendering conductive of controlled rectifiers, recovery circuitry for recovery from a bridge malfunction condition resulting from insufficient capacitor voltage to effect controlled rectifier commutation comprising;

(a) means to develop a voltage signal representative of the voltage across the capacitor associated with the controlled rectifier to be cummutated;

(b) means to compare said voltage signal with a reference signal of predetermined value and to provide an enabling signal in response to an established relationship therebetween; and,

(c) inhibiting means to inhibit the application of a gating signal to the next to be rendered conductive controlled rectifier in the absence of said enabling signal.

4,449,089

BATTERY CHARGERS

Harry L. Winkler, Box 632, Pinehurst, Id. 83850

Filed Nov. 16, 1981, Ser. No. 321,920

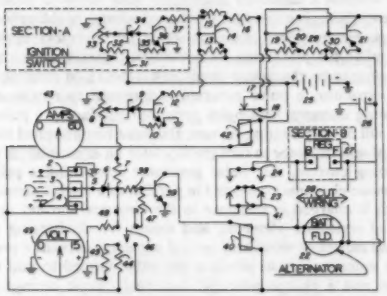
Int. Cl.³ H02J *7/00*

U.S. Cl. 320—15 **7 Claims**

1. A vehicular battery charger comprising in combination: means for installation, means for convenient connecting and or disconnecting to this vehicular battery charger's output power which consists of an electrical receptacle with at least three individual conductors, further consisting at

least a three conductor wiring harness jumper cable with a plug on one end to mate with said electrical receptacle and the other end of said jumper cable is equipped with a convenient means for connecting and or disconnecting to or from the external battery or batteries to be charged, said three conductor jumper cable has two of said three conductors connected together on the external battery(s) plus end, one of said two conductors is a feed-back line for a battery charger polarity sensor as well as a feed-back line for a battery charger voltage sensor for said external battery(s), a jumper cable feed-back line connecting to the center terminal on said receptacle also said center terminal on said receptacle is connected to the anode end of a first diode and the upper terminal of said receptacle is connected to a battery charger ground and the lower terminal of said receptacle is connected to the proper side of a battery charger ammeter;

a polarity sensor which consists of a first rectifier type diode, a first resistor, a first transistor of the NPN type and a heavy duty power relay all being electrically connected as a functional part of this battery charger, said first diode anode end connected to the center terminal of said receptacle and the cathode end connected to one end of the first resistor and the other end of said first resistor connected to the base of the first transistor, the emitter of said transistor is grounded and the collector is connected to one end of the power relay's coil and means for powering the other



end of said coil from an internal battery plus terminal the negative terminal of said internal battery is connected to said ground, the upper set of points of said power relay is connected to the positive terminal of said internal battery, the center set of points of said power relay is connected to the output terminal of the vehicle's alternator and is means for receiving said alternator's output power, the lower set of points of said power relay is connected to one end of a battery charger overload relay coil, when said battery charger is connected to an external battery said polarity sensor senses the polarity of said external battery if said polarity is not proper said charger will not respond, upon proper polarity said first diode passes voltage on to the base of said first transistor when said base receives a significant amount of positive voltage said transistor will switch on thus causing said power relay to switch said charger's output power to said external battery or batteries, when said external battery or batteries is disconnected said battery charger automatically resumes maintaining the charge on said internal battery;

a voltage sensor for the external battery which consists of second, third and fourth resistors, one potentiometer, a first zener diode, and a second transistor of the NPN type all being electrically connected as a functional part of this battery charger, said charger's second resistor connected at the point of in between said first diode and said first resistor and the other end of said second resistor connected to the lower end of the first potentiometer, the upper end of said potentiometer is grounded and the center terminal is connected to the first zener diode cathode end, and the anode end is connected to base of the second transistor as well as to one end of the third resistor the other end of said resistor is connected to the ground as well as the emitter of the said second transistor and the collector of said second transistor is connected to one end of the fourth resistor and the other end of said fourth resistor is connected to the base of the third transistor, said potentiometer is used as a voltage divider network when the voltage exceeds twelve volts on said first zener diode said zener diode will break down and pass the voltage in excess of twelve volts on in series to the base of said second transistor as well as to one end of said third resistor, so when said base of said second transistor receives a significant amount of positive voltage from the zener diode said second transistor will turn on, said external battery voltage sensor senses the voltage level of said external battery or batteries, said voltage sensor is adjustable being capable of sensing up to 100 volt range and when a pre-determined voltage level is reached, said sensor's transistor turns on thus providing means for a sensed, controlled, pre-set charge level for said external battery or batteries;

a transistor voltage regulator which consists of fifth, sixth and seventh resistors, and a third transistor of the PNP type all being electrically connected as a functional part of this battery charger, said charger's fifth resistor is connected across the base and the emitter of said third transistor, one end of the sixth resistor as well as one end of the seventh resistor is connected to the collector of said third transistor, the other end of said sixth resistor is connected to the ground, the other end of said seventh resistor is connected to the upper terminal of said charger's overload relay points, said voltage regulator is in a neutral condition until said regulator receives a command from said external voltage sensor, upon said external voltage sensor's transistor turning on pulls down the voltage on the collector of said sensor's transistor which reduces the voltage on the base of said regulator's transistor thus making said base more negative with respect to the emitter of said transistor causing said regulator's transistor to turn on;

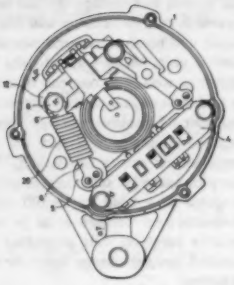
the output power transistors which consist of eighth, ninth and tenth resistors, one capacitor, and fourth and fifth transistors of the PNP type all being electrically connected as a functional part of this battery charger, said charger's lower terminal of said overload relay points is connected to the base of each of the fourth and fifth power transistor, the collectors of said fourth and fifth power transistors are connected to the field terminal of said vehicle's alternator and the emitter of said fourth transistor is connected in series with the eighth resistor to the power supply, the emitter of said fifth transistor is connected in series with the ninth resistor to the power supply, the capacitor is connected across said power supply and said ground, the tenth resistor is connected across the base and the emitter of said fifth transistor, said output power transistors are wired with a negative bias and will produce full output power until they receive a significant amount of positive voltage either from said transistor voltage regulator or from the opening of said overload relay points thus causing said output power transistors to reduce or cut off their output power, in combination, when said external voltage sensor senses a pre-set voltage level, said sensor's transistor turns on thus causing said regulator's transistor to turn on thus causing said power transistors to reduce or cut off their output power, the function of said output power transistors is to control the vehicle alternator's output power and does this by controlling said alternator's field voltage.

4,449,090

CHARGING GENERATOR FOR VEHICLES

Hitoshi Gotoh, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 16, 1982, Ser. No. 418,960
Claims priority, application Japan, Sep. 19, 1981, 56-139707
Int. Cl.³ H04B *15/00*; H01R *13/66*; H02K *11/00*
U.S. Cl. 322—95 3 Claims



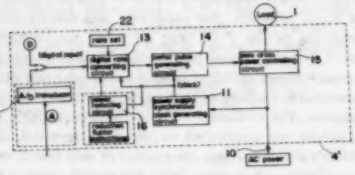
1. A vehicular charging generator, comprising:
a rear bracket;
a capacitor (5) mounted in said rear bracket;
a connecting plate (6) connecting said capacitor and an output connection (8) mounted on said bracket; and
an inductive solenoid coil (20) wound on said connecting plate for preventing noise from being transmitted to the outside.

4,449,091

POWER CONTROLLING CIRCUIT FOR AUTOMATIC REGULATING APPARATUS

Takashi Otoi, Arita, Japan, assignor to Hanwa Elecyronic Co., Ltd., Wakayama, Japan

Filed Dec. 31, 1981, Ser. No. 336,331
Int. Cl.³ G05F *1/45*
U.S. Cl. 323—236 7 Claims



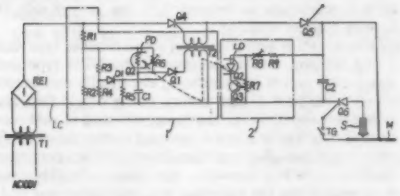
1. A power control apparatus for controlling application of A.C. power to a load wherein an output of an A.C. power source is connected to the load by at least one switch element, said control apparatus comprising:
feedback means for generating a feedback signal indicative of an amount of power actually applied to the load;
reference means for providing a reference signal indicative of a nominal amount of power to be applied to the load;
power reducing factor means for providing a power factor reducing signal indicative of a factor by which said nominal amount of power is to be reduced;
rate converting means responsive to said feedback, reference and power factor reduction signals for providing a control signal which corresponds to the amount of power to be applied to said load;
zero-cross power controlling means for switching said at least one switch element in response to said control signal at zero voltage cross-over points of said A.C. power source.

4,449,092

CAPACITOR CHARGING CIRCUIT FOR DISCHARGE TYPE WELDING TOOL

Yoshiteru Kondo, Toyohashi, Japan, assignor to USM Corporation, Farmington, Conn.

Filed Dec. 28, 1981, Ser. No. 335,153
Claims priority, application Japan, Dec. 26, 1980, 55-188076
Int. Cl.³ G05F *1/46*
U.S. Cl. 323—271 4 Claims



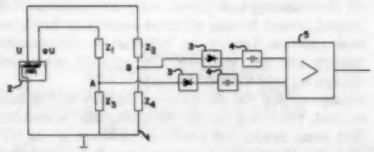
1. A capacitor charging circuit for a discharge type welding tool wherein a capacitor is charged with rectified pulsating currents through a thyristor to effect discharge-welding by the electric energy stored in the capacitor, said circuit comprising a rectifier for producing said rectified pulsating currents; a capacitor to be charged; a thyristor between said rectifier and said capacitor; a pulse generator connected to receive said pulsating currents, said pulse generator producing a pulse at each hill of the pulsating current, the pulse being applied to the gate of said thyristor to turn the thyristor on at each hill of said pulsating current, said pulse generator comprising a pair of resistance elements connected in parallel to a second capacitor which is charged in response to the electrical current in the pair of resistance elements, and means for discharging said second capacitor when said second capacitor exceeds a predefined voltage so as to produce the pulse applied to said thyristor; and a charge potential detecting circuit arranged to directly measure the charge potential across said charged capacitor so as to transfer a signal, changed according to the level of the capacitor potential, to said pulse generator thereby to control the timing of the pulse generation at each hill of said pulsating current.

4,449,093

CIRCUIT FOR MEASURING ELECTRICAL PROPERTIES

Günter Schierjott, Lorenz-Rebbert-Allee 1, 4630 Bochum 1, Fed. Rep. of Germany

Filed Sep. 28, 1981, Ser. No. 306,503
Claims priority, application Fed. Rep. of Germany, Oct. 8, 1980, 3037925
Int. Cl.³ G01R *27/00*
U.S. Cl. 324—57 R 4 Claims



1. A circuit for measuring an electrical property, such as the resistance, capacitance or inductance of a circuit component, said circuit including two bridge branches each having at least two serially-connected components, one bridge branch having

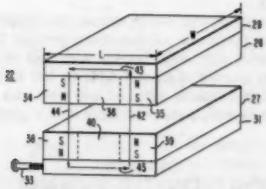
a variable resistance bridge component representing an electrical property under measurement, a common voltage supply having two supply outputs each at a different voltage, each bridge branch being connected to one of said two supply outputs such that the voltage applied to the bridge branch without said variable resistance bridge component differs from the voltage applied to the other bridge branch by a factor, and means to detect the voltage difference at measuring points between the serially-connected components of the bridge branches for producing a measurable signal, said means to detect eliminating the effect of a phase shift caused by complex components upon said measurable signal, said means to detect including two rectifiers each connected to one of said measuring points, electrical storage means receiving the output from said rectifiers for providing direct current outputs defining said measurable signal.

4,449,094

TEMPERATURE COMPENSATED MAGNETIC DAMPING ASSEMBLY FOR INDUCTION METERS

John A. MacFadden; Joseph M. Keever, both of Raleigh, and William J. Zisa, Cary, all of N.C., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 10, 1981, Ser. No. 272,244
Int. Cl.³ G01R *1/14, 11/10, 11/185*
U.S. Cl. 324—152 **14 Claims**



14. A permanent magnet assembly, comprising:

two pieces of anisotropic magnetic material, each of said pieces comprising two magnetized regions of opposite polarity with an unmagnetized dead zone therebetween, said pieces being disposed in cooperative association to define a gap between them, said two magnetized regions of said two pieces being associated to define two positions within said gap, each of said positions having magnetized regions of opposite polarity disposed proximate each other on opposing sides of said gap;

a first flux return member disposed adjacent to a first one of said two pieces, said first one piece being disposed between said first flux return member and said gap, said first flux member providing a flux path between said two magnetized regions of said first one piece;

a second flux return member disposed adjacent to a second one of said two pieces, said second one piece being disposed between said second flux return member and said gap, said second flux return member providing a flux path between said two magnetized regions of said second one piece; and

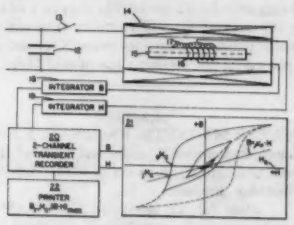
means for moving said second flux return method in relation to said second piece in a direction parallel to said gap.

4,449,095

PROCESS AND APPARATUS FOR RECORDING HYSTERESIS CURVES OF MAGNETIC MATERIALS

Erich Steingroever, Flensburger Strasse 33, 53 Bonn am Rhein, and Dietrich Steingroever, Bergisch-Gladbach, both of Fed. Rep. of Germany

Filed Jul. 20, 1981, Ser. No. 284,976
Claims priority, application Fed. Rep. of Germany, Jul. 26, 1980, 3028410
Int. Cl.³ G01R *33/14;* **G01N** *27/72*
U.S. Cl. 324—223 **13 Claims**



11. Apparatus for measuring the hysteresis curve of a magnetic material, comprising:

means to generate an alternating magnetic field of short duration having a high initial amplitude with a decreasing amplitude thereafter within which field a sample to be measured may be placed;

measuring coil means and potential coil means, both to be attached to said sample;

integrating means connected with said measuring coil means and potential coil means for converting electrical values detected by said coils into respective electrical signals indicating values of flux density B and internal field intensity H of said sample while in said magnetic field;

transient recorder means having at least two channels connected to said integrating means for recording and storing said values of B and H in real time, and for converting said values into digital units; and

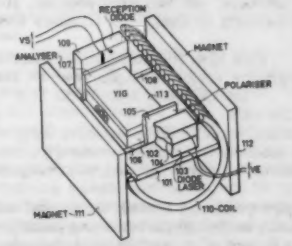
display means connected to the output of said transient recorder means for displaying at least one set of simultaneous values of B and H.

4,449,096

MEASURING HEAD FOR MAGNETOMETER AND MAGNETOMETER INCORPORATING SUCH A HEAD

Gérard Doriath; Roger Gaudry, and Georges Hepner, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Dec. 3, 1980, Ser. No. 212,620
Claims priority, application France, Dec. 14, 1979, 79 30721
Int. Cl.³ G01R *33/032;* **G02F** *1/09*
U.S. Cl. 324—244 **6 Claims**



1. A measuring head for a magnetometer comprising:

polarized light beam emitting means including a diode and a polarizer for producing a polarized light beam;

magnetic field producing means;

a planar layer of a magnetic material deposited on a substrate having a first and second edge with said polarizer being located near said first edge and wherein the thickness of said magnetic layer permits a multimode guided propagation of said beam in the plane of said layer and also permits the rotation of said beam in its polarization direction wherein said magnetic field producing means produces in said layer a magnetic field perpendicular to the propagation direction of said beam of polarized light and wherein said magnetic field is parallel to the plane of said layer; and

means for measuring said rotation, wherein said rotation measuring means comprises an analyzer and a photodetector placed on the second edge of said layer.

4,449,097

NUCLEAR MAGNETIC RESONANCE SYSTEMS

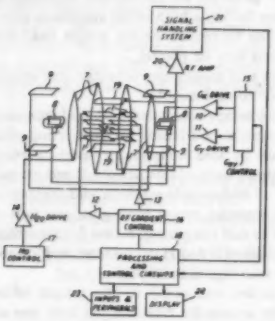
Ian R. Young, Sunbury-on-Thames, and Michael Burl, Hampton Hill, both of England, assignors to Picker International Limited, Wembley, England

Filed Jul. 15, 1981, Ser. No. 283,635

Claims priority, application United Kingdom, Aug. 6, 1980, 8025615

Int. Cl.³ G01R 33/08

U.S. Cl. 324—309 **9 Claims**



1. A nuclear magnetic resonance system for examining a region of a body by a steady state free precession procedure, the system including, for selecting and exciting a chosen slice of the body, a coil system providing two RF fields having respective gradients in opposing directions perpendicular to the plane of the slice.

4,449,098

ARRANGEMENT FOR DETECTING THE LOCATION OF AN ELECTRICALLY INSULATIVE CONTINUOUS ITEM POSITIONED UNDERGROUND

Syuichi Nakamura, and Masakazu Morioka, both of Osaka, Japan, assignors to Osaka Gas Company Limited, Osaka, Japan

Filed Mar. 10, 1981, Ser. No. 242,255

Claims priority, application Japan, Mar. 19, 1980, 55-35611

Int. Cl.³ G01V 3/30; H01B 7/28

U.S. Cl. 324—326 **2 Claims**

1. An arrangement for detecting above the ground the location of a generally horizontally arranged gas conveying passage positioned beneath the ground, said arrangement comprising:

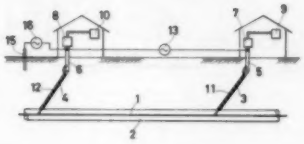
a gas pipe positioned beneath the ground and defining a generally horizontal gas conveying passage, said gas pipe being formed of an electrically insulative synthetic resin material;

an electrically conductive wire positioned along the exterior of said gas pipe, said wire comprising a flexible metallic core formed by stranding together a plurality of single wires, and an electrically conductive flexible outer coating layer applied directly over said core, said layer being formed of a combination of 100 parts by weight of chloroprene rubber or natural rubber per 50 to 60 parts by weight of acetylene carbon, and said layer having a specific resistance of approximately 100 ohm-cm;

a steel pipe extending into the ground;

a branch gas pipe extending from said gas pipe to said steel pipe and positioned beneath the ground, said branch gas pipe being formed of an electrically insulative synthetic resin material;

an electrically conductive branch wire extending along the exterior of said branch gas pipe, said branch wire comprising a flexible metallic core formed by stranding together a



plurality of single wires, and an electrically conductive flexible outer coating layer applied directly over said core, said layer being formed of a combination of 100 parts by weight of chloroprene rubber or natural rubber per 50 to 60 parts by weight of acetylene carbon, and said layer having a specific resistance of approximately 100 ohm-cm, said branch wire having a first end electrically connected to said wire and a second end wound around the exterior of said steel pipe, an end of said core of said second end of said branch wire being welded to the exterior of said steel pipe; and

high frequency power source means, electrically connected to said steel pipe at a position above ground, for supplying to said steel pipe, said branch wire and said wire high frequency energy of from 2 KHz to 100 KHz at 6 volts, such that said branch wire and said wire emit electromagnetic waves which are detectable above ground.

4,449,099

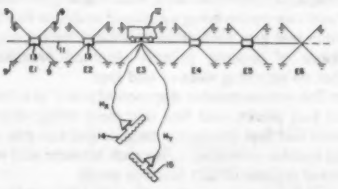
RECORDING DECIMATED MAGNETOTELLURIC MEASUREMENTS WITH COHERENCE

Gustave L. Hoehn, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 18, 1981, Ser. No. 293,786

Int. Cl.³ G01V 3/08

U.S. Cl. 324—350 **10 Claims**



9. In magnetotelluric exploration wherein channels of measurements are obtained of the earth's electric and magnetic field as a function of time, said channels representing said measurements at spaced locations on the earth, and wherein said measurements are digitized and stored, the method of removing noise spikes from said measurements comprising:

selecting blocks of samples of said measurements;

transforming said blocks into frequency domain representations of power spectra, including amplitude and phase, at selected harmonics;

determining the coherence between said power spectra for two successive blocks of said samples representing measurements from different channels, said coherence being represented by values which are high to indicate high coherence and low to represent low coherence;

comparing said coherence to a threshold; and

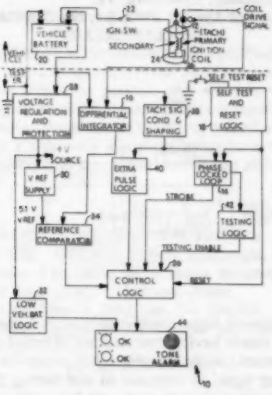
stacking the power spectra which have a coherence exceeding said threshold whereby measurements having said noise spikes are not stacked.

4,449,100

IGNITION SYSTEM TESTER

Robert C. Johnson, Dearborn; Thomas C. Nation, and David L. Perry, both of Canton, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Apr. 5, 1982, Ser. No. 365,433
Int. Cl.³ F02P *17/00*
U.S. Cl. 324—378 **7 Claims**



1. A vehicle ignition system tester for determining when a fault exists in the ignition system of a vehicle, said ignition system tester including:

detection means for detecting the occurrence of a spark firing voltage;

integrating means for integrating the spark firing voltage over a predetermined period of time; and

decision means for determining whether the integrated voltage reaches a predetermined threshold thus signifying that sufficient spark plug firing energy was stored in the coil and there is no fault in the vehicle ignition system, said decision means including:

a phase lock loop circuit for generating strobe pulses at predicted spark plug firing times and comparing the occurrence of a spark plug firing pulse to the occurrence of the strobe pulse;

a first phase lock loop filter having a relatively slow time constant for adjusting the strobe repetition rate to slow changes in engine speed;

a second phase lock loop filter having a relatively fast time constant for adjusting the strobe repetition rate to rapid changes in engine speed; and

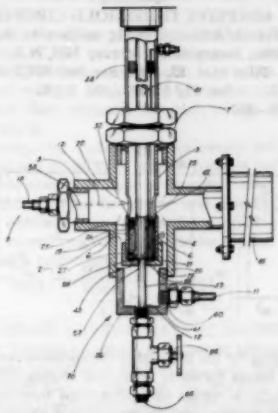
a selection means for selecting between said first and second phase lock loop filters so as to minimize strobe repetition rate change in response to additional erroneous or missing spark plug firing pulses and maximize strobe repetition rate change in response to actual changes in engine speed.

4,449,101

JET WASH FOR ULTRASONIC STREAMING CURRENT DETECTOR

Anthony S. Canzoneri, Kenner, and Joseph V. McDonald, Metairie, both of La., assignors to Process Development, Inc., Kenner, La.

Continuation-in-part of Ser. No. 375,577, May 6, 1982, Pat. No. 4,446,435. This application Oct. 22, 1982, Ser. No. 435,903
Int. Cl.³ G01N *27/60*
U.S. Cl. 324—453 **11 Claims**



1. A jet wash apparatus for ultrasonic streaming current detector, having passageway means for variably conveying a cleaning fluid into said ultrasonic streaming current detector, said ultrasonic streaming current detector comprising:

a. a cross-shaped tubular member having cross-member and longitudinal elements communicating with each other and filled with a test fluid containing charge-influencing species;

b. a piston receiving member mounted coaxially with said longitudinal element;

c. a casing substantially surrounding said piston receiving member;

d. a pair of electrodes, the first of which is disposed adjacent to a bottom end of said piston receiving member and the second of which is disposed in said piston receiving member above the first electrode;

e. a reciprocating element mounted in a central bore of said piston receiving member;

f. means for reciprocating and reciprocating element within the bore of said piston receiving member, so as to cause a continuous repititive flow of said test fluid to and from said bore to thereby generate electrical signals across said electrodes;

g. means for amplifying said electrical signals generated across said electrodes and means for utilizing said amplified signals;

h. means for conducting said electrical signals generated across said electrodes from said electrodes to said means for amplifying said electrical signals and said means for utilizing said amplified signals;

i. means for synchronizing said conduction of said electrical signals with the action of said reciprocating element;

j. an ultrasonic cleaning device disposed adjacent to said piston receiving member and said casing for generating mechanical vibrations to prevent an agglomeration of said charge-influencing species contained by said test fluid in the area about said electrodes,

and wherein said jet wash apparatus comprises:

a connector receptacle connected in fluid communication

with the bottom of said longitudinal element of said cross-shaped tubular member;

a cleaning fluid inlet means connected in fluid communication to the bottom of said connector receptacle, said cleaning fluid inlet means having an adjustable valve;

a conduit connected in fluid communication at its bottom end to said cleaning fluid inlet means and fluidly communicating with said piston receiving member at its top end.

4,449,102

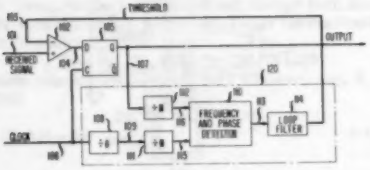
ADAPTIVE THRESHOLD CIRCUIT

Gerald L. Frazer, Atkinson, N.H., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 15, 1982, Ser. No. 358,310

Int. Cl.³ H03K *5/08, 5/153*

U.S. Cl. 328—162 **10 Claims**



1. Apparatus for use in a digital transmission system wherein the digital signal forms at least one reoccurring signal-eye surrounded by a region of intersymbol interference in the voltage-time domain, said apparatus being characterized by

means (e.g., **102, 105**) for sensing the amplitude of the digital signal relative to a threshold at discrete times which coincide with said signal-eye; and

means (e.g., **108, 110, 114**) responsive to the sensed amplitude for generating a correction signal which drives said threshold solely toward a predetermined level relative to said signal-eye, said level passing only through said region of intersymbol interference.

4,449,103

HIGH POWER CLASS B MODULATION AMPLIFIER FOR A BROADCAST TRANSMITTER

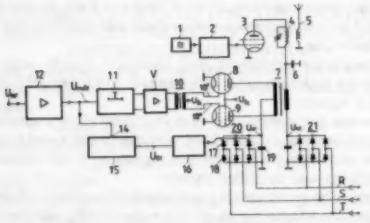
Bohumil Kyrian, Windisch, Switzerland, assignor to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Dec. 4, 1981, Ser. No. 327,588

Claims priority, application Switzerland, Dec. 12, 1980, 9173/80

Int. Cl.³ H03F *3/26*

U.S. Cl. 330—123 **6 Claims**



1. A high power class B modulation amplifier for a broadcast transmitter, comprising:

first and second high power amplifying means connected for push-pull operation to a primary winding of a modulation transformer;

preamplifying means for amplifying an incoming audio signal to a level sufficient for controlling the operation of said first and second high power amplifying means;

a modulator rectifier including at least one controllable rectifier provided for deriving a variable D.C. power supply voltage for said first and second high power amplifying means from an A.C. line voltage;

a voltage control stage provided for deriving a control signal from said incoming audio signal, said control signal corresponding at least partially to the envelope of said incoming audio signal and following the amplitude of said envelope with a presettable response time; and

a control device connected to the output of said voltage control stage provided for delivering an output signal to said at least one controllable rectifier in accordance with said control signal, so that said variable D.C. power supply voltage varies in accordance with said control signal.

4,449,104

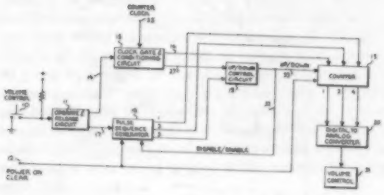
CIRCUIT FOR CONTROLLING THE OUTPUT LEVEL OF AN ELECTRONIC DEVICE

William C. Agnor; Edwin C. Lafferty, both of Lynchburg, and Samuel Toliver, Rustburg, all of Va., assignors to General Electric Company, Lynchburg, Va.

Filed Apr. 23, 1982, Ser. No. 371,074

Int. Cl.³ H03G *3/02*

U.S. Cl. 330—279 **20 Claims**



1. An improved signal level control circuit comprising:

a. switch means having operated and released states;

b. input means coupled to said switch means for producing a counting signal in response to and during the time said switch means are operated, and for producing a trigger signal in response to said switch means being released;

c. counting means arranged to produce a sequence of up counts and a sequence of down counts alternately and repetitively in response to said counting signal;

d. control means coupling said input means to said counting means whereby said counting means produce said counts in response to said counting signal, and whereby said counting means produce a count in the same direction in response to said counting signal following said trigger signal;

e. and means coupled to said counting means for deriving an output therefrom.

4,449,105

PASSIVE MASER USING TIMESHARING FOR CONTROL OF THE CAVITY AND CONTROL OF THE OSCILLATOR ON THE LINE OF STIMULATED EMISSION

Alick H. Frank, Springfield, and Joseph D. White, Alexandria, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 19, 1981, Ser. No. 265,129

Int. Cl.³ H03L *7/26*

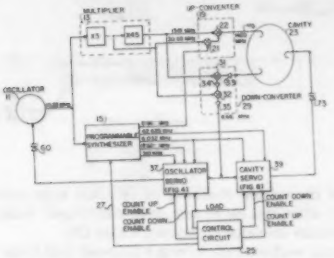
U.S. Cl. 331—3 **14 Claims**

10. A process for controlling a passive maser having a resonant cavity which contains a medium capable of stimulated emission, and which is excited by an injected signal, comprising the steps of:

producing from a signal picked off from the cavity a first error signal representing the difference between the carrier frequency of the injected signal and the frequency of the stimulated emission;

using the first error signal to adjust the carrier frequency;

producing from the picked-off signal a second error signal representing the difference between the resonance frequency of the cavity and the said carrier frequency; and



using the second error signal to adjust the resonance frequency,

wherein production of the second error signal is periodically inhibited and that the first error signal is produced only during the inhibition periods, and wherein the step of producing a first error signal includes comparing a signal that preserves the phase of the signal picked off from the cavity to a reference signal to produce a third signal whose pulse width represents their phase difference.

4,449,106

NOISE REDUCING APPARATUS

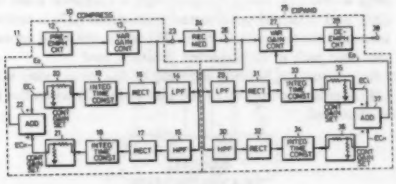
Yukinobu Ishigaki, Machida; Yutaka Haramoto, Zama, and Kaoru Totsuka, Yokohama, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Mar. 4, 1982, Ser. No. 354,863

Claims priority, application Japan, Mar. 10, 1981, 56-34148; Mar. 23, 1981, 56-41976

Int. Cl.³ H04B *1/64*

U.S. Cl. 333—14 **5 Claims**



1. A noise reducing apparatus comprising:

a pre-emphasis circuit for performing a pre-emphasis operation with respect to an input signal;

a first variable gain control circuit for giving a level compression characteristic to an output signal of said pre-emphasis circuit, to produce an output signal to a transmission path;

a first control voltage producing circuit for dividing the output signal of said first variable gain control circuit into a plurality of frequency bands, to produce a plurality of control voltages respectively given mutually different integration time constants for each of the divided frequency bands;

a first weighting circuit for respectively and relatively weighting said plurality of control voltages obtained from said first control voltage producing circuit;

a first adding circuit for adding said plurality of control voltages obtained from said first weighting circuit, to obtain a first control voltage to be applied to said first variable gain control circuit;

a second variable gain control circuit for giving a level expansion characteristic to the level compressed signal obtained through said transmission path, said level expansion characteristic being complementary to said level compression characteristic;

a de-emphais circuit having a characteristic complementary to the pre-emphasis characteristic of said pre-emphasis circuit, for performing a de-emphasis operation with respect to an output signal of said second variable gain control circuit;

a second control voltage producing circuit for dividing the input signal of said second variable gain control circuit into a plurality of frequency bands, to produce a plurality of control voltages respectively given mutually different integration time constants for each of the divided frequency bands;

a second weighting circuit for respectively and relatively weighting said plurality of control voltages obtained from said second control voltage producing circuit; and

a second adding circuit for adding said plurality of control voltages obtained from said second weighting circuit, to obtain a second control voltage to be applied to the second variable gain control circuit.

4,449,107

SURFACE ELASTIC WAVE ELEMENT

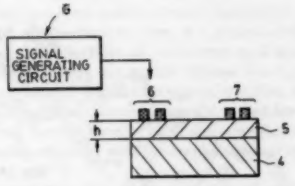
Ryuichi Asai; Takeshi Okamoto, and Shoichi Minagawa, all of Tokyo, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Filed Mar. 3, 1982, Ser. No. 354,430

Claims priority, application Japan, Mar. 5, 1981, 56-31562; Sep. 7, 1981, 56-139724; Sep. 30, 1981, 56-153826; Sep. 30, 1981, 56-153825; Sep. 30, 1981, 56-153827; Oct. 9, 1981, 56-160062; Oct. 12, 1981, 56-163148

Int. Cl.³ H03H *9/145, 9/25, 9/42*

U.S. Cl. 333—150 **14 Claims**



1. A surface elastic wave element which comprises:

a (110)-oriented silicon substrate;

a zinc oxide layer grown on said substrate; and

electrodes formed on said zinc oxide layer.

4,449,108

BAND-STOP FILTER FOR VHF-UHF BAND

Haruyoshi Endo, Sagamihara; Mitsuo Makimoto, Yokohama; Ko Kikuchi, Tokyo, and Sadahiko Yamashita, Sagamihara, all of Japan, assignors to Matsushita Electric Industrial Company, Limited, Osaka, Japan

Filed Feb. 16, 1982, Ser. No. 348,768

Claims priority, application Japan, Feb. 17, 1981, 56-22600

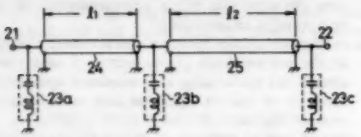
Int. Cl.³ H01P *1/202, 7/04;* H03H *7/01*

U.S. Cl. 333—202 **7 Claims**

1. A band-stop filter for VHF-UHF band, comprising:

(a) at least three series resonance circuits, one of said series resonance circuits being connected between an input terminal and ground, and another one of said series resonance circuits being connected between an output terminal and ground; and

(b) a plurality of transmission lines each connected between said series resonance circuits, said transmission lines having different electrical lengths from each other, one of said transmission lines having an electrical length which is shorter or longer than the quarter wavelength of the



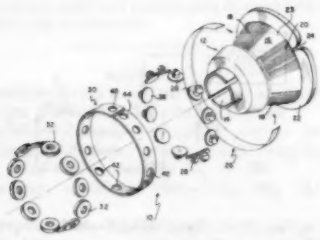
center frequency of the stop band of said band-stop filter by more than 20 but less than 50 percent, while at least one of remaining transmission line or lines having electrical length which is equal to said quarter wavelength or shorter or longer than said quarter wavelength by less than 20 percent.

4,449,109

MAGNET SUPPORT COLLAR

Kimberly A. Paddock, Blaine, and Roy L. Ruth, Moundsview, both of Minn., assignors to Ball Corporation, Muncie, Ind.

Filed Nov. 8, 1982, Ser. No. 439,696
Int. Cl.³ H01F *1/00*
U.S. Cl. 335—212 **12 Claims**



1. Apparatus for correcting deflection distortion of an electron beam in a cathode ray tube assembly comprising:

an elongated strip extending around said cathode ray tube assembly, said elongated strip having a plurality of holes distributed along the length thereof;

a plurality of fasteners, each of said plurality of fasteners including a base portion and a shaft portion substantially perpendicular to said base portion, the shaft portion of each of said fasteners extending through a hole in said elongated strip, at least a portion of each shaft portion being bifurcated by a vertical slot;

a plurality of ring-shaped permanent magnets, each of said magnets being supported on the shaft portion of one of said plurality of fasteners, said bifurcated portion permitting easy insertion of said magnets onto said shaft portions while retaining said magnets in position thereon; and

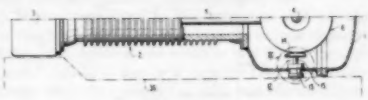
means for attaching said elongated strip to said cathode ray tube assembly.

4,449,110

DEVICE FOR CHOCKING AN INVERTED TYPE CURRENT TRANSFORMER WHEN TRANSPORTED ON ITS SIDE

Jean C. Duchene, Le Bourget Du Lac, France, assignor to Alsthom-Atlantique, Paris, France

Filed Aug. 20, 1982, Ser. No. 409,806
Claims priority, application France, Sep. 17, 1981, 81 17547
Int. Cl.³ H01F *27/02*
U.S. Cl. 336—94 **5 Claims**



1. A device for chocking an inverted type current transformer when laid on its side, said transformer comprising:

a column insulator (2) having a base (3),

a metal enclosure (1) having a sidewall, said metal enclosure (1) being disposed at the top of said column insulator (2),

an active part disposed in said metal enclosure (1), said active part having a magnetic core (8) attached to said base (3) of the column insulator (2) by means of a mast (11) disposed within the column insulator (2),

said device comprising:

at least one jack disposed in said metal enclosure (1) between said sidewall thereof and an external surface of the toroidal magnetic core (8),

said at least one jack having a jack base (13) fixed to said sidewall of said metal enclosure (1) and having a bore extending in the direction towards said toroidal magnetic core (8),

said at least one jack further comprising a jack rod (15) sliding within the bore of said jack base (13),

said jack rod (15) including a threaded axial bore (19),

two stop screws (26, 27) of different lengths for selective projection into said jack base (13) bore from outside the metal enclosure (1) and for screwing into the threaded axial bore (13) in said jack rod (15), the longer stop screw (26) when the jack is extended, the shorter stop screw (27) when the jack is retracted, with the head of the longer stop screw (26) being formed with a threaded axial bore (35), and wherein the shorter stop screw (27) is screwed into said threaded axial bore (35) when not used to maintain said jack in its retracted position, and

holding means for holding the head of the longer stop screw (26) against the bottom of the jack base (13) when the jack is extended.

4,449,111

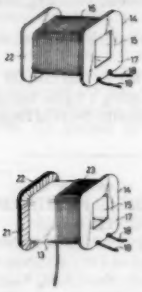
TRANSFORMER

Tomoo Nakajima, Omiya, Japan, assignor to Tamura Seisakusho Co., Ltd., Tokyo, Japan

Filed Feb. 16, 1982, Ser. No. 349,260
Claims priority, application Japan, Jul. 17, 1981, 56-107079
Int. Cl.³ H01F *27/30*
U.S. Cl. 336—206 **4 Claims**

1. A transformer comprising a coil bobbin having at both axial ends opposing radially extending flanges and between said flanges an axial winding part, primary and secondary coils wound in superposed relation on said winding part between the flanges of said coil bobbin, and an insulator interposed between said primary and secondary coils, said insulator comprising a corrugated insulating base member wider than said winding part of the bobbin extending completely around said coil bobbin, and an insulating sheet member having substantially the same width as said winding part, said insulating base member having a strength relatively higher than that of said insulating sheet member and corrugated to have a plurality of

elevations extending in the direction perpendicular to the coil winding direction to provide extensibility to said insulating base, and having respective side portions of the insulating base bent to extend in the radial direction outwardly adjacent respective side edges of the insulating member along the inner



surfaces of both flanges, said corrugated insulating base member and insulating sheet member being formed to extend adjacent each other coaxially of said axial winding part between the flanges of said coil bobbin and between said primary and secondary coils.

4,449,112

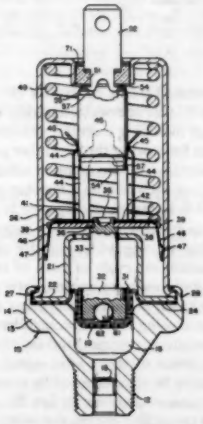
OIL PRESSURE SENDER WITH ROLLING DIAPHRAGM

Richard E. Gould, Shelby, N.C., assignor to Fasco Controls Corporation, Shelby, N.C.

Continuation-in-part of Ser. No. 359,206, Mar. 18, 1982. This application Dec. 8, 1982, Ser. No. 447,779

Int. Cl.³ H01L *10/10*

U.S. Cl. 338—39 **28 Claims**



1. A fluid pressure transducer, comprising

a housing having a metal cover secured to one end thereof,

a flexible diaphragm secured over a cavity in said housing to communicate at one side with a fluid under pressure,

a variable resistor mounted in said cover and connected at one end to an electrical terminal on the exterior of said cover,

a plunger mounted to reciprocate between said resistor and said opposite side of said diaphragm in response to changes in the pressure of said fluid, and having thereon two sets of resilient contacts slidably engaged with said resistor and with said cover, respectively,

a coiled compression spring interposed between said cover and said plunger resiliently to resist movement of said plunger in one direction by said diaphragm, and

means for preventing said spring from applying a rotational torque to said diaphragm.

4,449,113

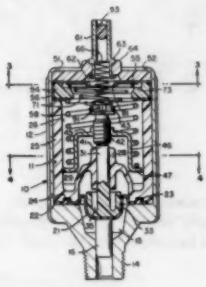
OIL PRESSURE SENDER WITH FRICTION FREE RESISTOR DEVICE

Richard E. Gould, Shelby, and William P. Page, Kings Mountain, both of N.C., assignors to Fasco Controls Corporation, Shelby, N.C.

Filed Jun. 22, 1983, Ser. No. 506,726

Int. Cl.³ H01L *10/10*

U.S. Cl. 338—39 **14 Claims**



1. A fluid pressure transducer, comprising

a housing closed at one end and having a fluid pressure inlet in its opposite ends,

fluid pressure sensing means in said housing including a plunger mounted in said housing to reciprocate between opposite ends thereof in response to changes in the pressure of the fluid supplied to said inlet,

a flat, spirally shaped resistor element mounted in said housing with its convolutions lying in a plane extending transversely of the direction of reciprocation of said plunger,

means for connecting said resistor element in a fluid pressure indicator circuit, including a conically coiled, electrically conductive spring element mounted in said housing adjacent said resistor element with the convolutions thereof registering coaxially with the convolutions of said resistor element, and

means connecting said plunger to one of said elements, whereby when said plunger is moved in one direction the convolutions of said spring element are progressively pressed into engagement with the registering convolutions of said resistor element, and are progressively disengaged from the convolutions of the resistor element when said plunger is moved in the opposite direction.

4,449,114

SYSTEM FOR IDENTIFYING AND DISPLAYING DATA TRANSMITTED BY WAY OF UNIQUE IDENTIFYING FREQUENCIES FROM MULTIPLE VEHICLES

Anthony C. Fascenda, Pacifica; Daniel L. Gregg, San Francisco, both of Calif., and Rollin W. Ache, Phoenixville, Pa., assignors to Dataspeed, Inc., Burlingame, Calif.

Continuation-in-part of Ser. No. 134,664, Mar. 27, 1980, abandoned. This application Mar. 26, 1982, Ser. No. 362,481

Int. Cl.³ G08B *1/12*

U.S. Cl. 340—988 **5 Claims**

1. A system for detecting and indicating relative location and speed of a number of vehicles on a closed racetrack where each vehicle generates a unique radio frequency identification signal, said vehicle making a plurality of laps around said

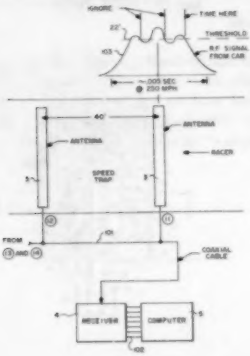
racetrack in a given race and also temporarily leaving and then re-entering said racetrack, said system comprising:

a plurality of antennas on said track at spaced locations for sensing said signals as said vehicles pass;

a first pair of antennas spaced relatively close together compared to the overall racetrack length to provide a speed trap;

a second pair of antennas spaced significantly greater apart than said first pair and located relatively far from said first pair;

common cable means for interconnecting all of said antennas for receiving said signals of various frequencies on a common transmission path;



timing means connected to said cable means for recording elapsed times of vehicles between antenna locations having minimum valid times between said various antenna locations and having preset and different maximum times for the passage of a vehicle between said two antennas of said first pair and said antennas of said second pair, said maximum times being based on said antenna pair spacing and a minimum vehicle speed, said timing means including update means responsive to a vehicle not passing through one of said antenna pairs in said preset maximum time for said one antenna pair for updating the location of said vehicle to said other antenna pair, whereby the true location of said vehicle on said racetrack is established despite pitstops and/or mechanical difficulties.

4,449,115

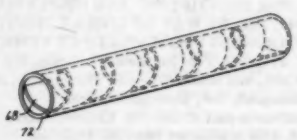
APPARATUS FOR DETECTING FERROMAGNETIC MATERIAL

Ralph J. Koerner, Pomona, Calif., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Continuation of Ser. No. 310,764, Oct. 13, 1981, which is a continuation-in-part of Ser. No. 197,173, Oct. 15, 1980, abandoned. This application Aug. 2, 1983, Ser. No. 519,214

Int. Cl.³ G08G *1/01*

U.S. Cl. 340—941 **40 Claims**



15. A passive apparatus for detecting a ferromagnetic material comprising:

a core having a major axis along its largest dimension and having orthogonal cross-sectional axes, said major axis of said core being at least partially aligned with the magnetic flux lines of the earth's magnetic field, said core consisting essentially of a permeable material which approaches saturation under the influence of said magnetic field intensity, said major axis being much larger than the smaller of said orthogonal cross-sectional axes;

a coil having a conductor surrounding said major axis of said core;

said coil and said core having an impedance measured from said coil; and

detection means coupled to said coil for monitoring impedance and for generating a signal indicative of the detection of said ferromagnetic material responsive to a change in said impedance.

4,449,116

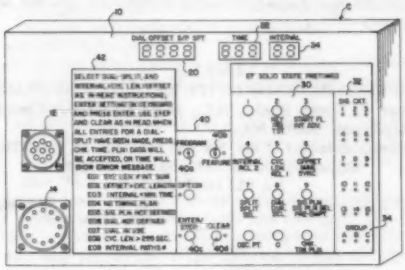
ACTUATED DIGITAL PRETIMED TRAFFIC CONTROLLER

Frank W. Hill, Round Rock; William L. May, and Willard L. Kent, both of Austin, all of Tex., assignors to Gulf & Western Manufacturing Company, Southfield, Mich.

Filed Dec. 1, 1981, Ser. No. 326,226

Int. Cl.³ G08G *1/07*

U.S. Cl. 340—909 **11 Claims**



1. In a digital pretimed traffic controller of the type used to control traffic signals at an intersection during a selected signal cycle, said controller including a central processing unit, a read only memory means for storing the executive program for said controller and a plurality of programmed solid state camshaft simulating signal plans each having a number of distinct intervals to be processed in sequence during a cycle of said controller, a random access read/write memory means for storing a rotary dial simulating timing plan having stored duration times for each of said distinct intervals of each of said signal plans stored in said read only memory means, external cycle select means for activating one of said signal plans and one of said timing plans for processing by said controller in accordance with said stored executive program, and interfacing means for controlling the condition of said traffic signals in accordance with the selected cycle being processed by said controller, the improvement comprising: detector means for directing a demand signal to said controller, means for providing a plurality of different interval sequences in a selected portion of the selected cycle being processed and means for selecting one of said interval sequences in response to said demand signal.

4,449,117

ENCODER TRACKING DIGITIZER HAVING STABLE OUTPUT

Stephen M. Fortescue, Northridge, Calif., assignor to Dataproducts Corporation, Woodland Hills, Calif.

Filed Nov. 13, 1981, Ser. No. 321,333

Int. Cl.³ H03K *13/08*

U.S. Cl. 340—347 SY **2 Claims**

1. A digitizer for receiving analog signals representing the

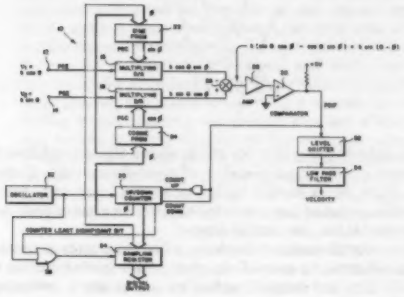
sine and cosine of an unknown angle and providing a digital output of the angle, comprising:

a bidirectional counter for providing a digital signal representative of a reference angle;

first means for providing digital signals representative of the sine and cosine of the reference angle;

multiplication means for providing a first analog signal representative of the product of the sine of the unknown angle and the cosine of the reference angle and a second analog signal representative of the product of the cosine of the unknown angle and the sine of the reference angle;

comparison means for comparing the first and second analog signals, wherein the output of the comparison means



causes the counter to vary the value of the reference angle until it is equal to the unknown angle, whereby the output of the counter is a digital representation of the unknown angle;

sampling means including a sampling register for receiving and storing the output of the counter and logic circuitry for controlling the operation of the sampling register; and

a clock for controlling the counting of the counter, wherein the logic circuitry receives a clock signal from the clock and a signal representing the least significant bit of the counter output and provides a control signal to the sampling register to receive the output of the counter on alternate counts thereof to thereby provide a stable digital output representation of the unknown angle.

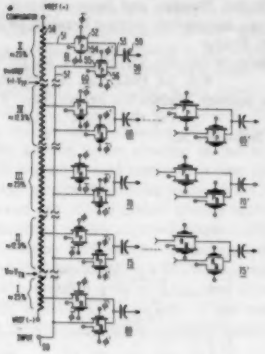
4,449,118

SWITCHING CIRCUITRY AS FOR A FLASH A/D CONVERTER

Andrew G. F. Dingwall, Bridgewater, and Victor Zazzu, Montvale, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 30, 1981, Ser. No. 326,153
Int. Cl.³ H03K *13/02, 13/175*
U.S. Cl. 340—347 AD **12 Claims**

1. A flash A/D converter having a resistive ladder for establishing incrementally ascending reference potentials, a plurality of summing capacitors serially connected to respective input terminals of a like number plurality of selectively self biasing inverter circuits and a signal input terminal, said A/D converter having a plurality of switch means for alternately serially connecting respective ones of the reference potentials or input signal from said signal input terminal to respective ones of said plurality of summing capacitors, each of said plurality of switch means including at least two transistors of like type having an interconnection at one of said capacitors, one of said two transistors being connected to one of said reference potentials and the other of said two transistors being connected to said input terminal, the two transistors of ones of said plurality of switch means connected to a prescribed range of most positive reference potentials being P-type FET's precluding the capacitors connected thereto from being discharged below a predetermined first potential due to application of input signal potential to said signal input terminal less than said predetermined first potential and the two transistors of ones of said plurality of switch means connected to a prescribed range of most negative reference potentials being N-type FET's precluding the respective capacitors connected



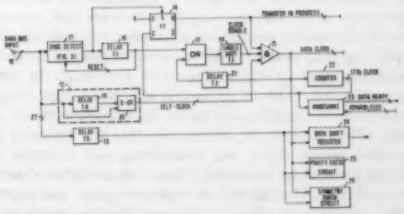
thereto from being charged above a predetermined second potential due to application of input signal potential to said input terminal greater than said predetermined second potential.

4,449,119

SELF-CLOCKING SERIAL DECODER

Craig A. Hanna, Vestal, and Edmund Lancki, Newark Valley, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 14, 1981, Ser. No. 330,621
Int. Cl.³ G06F *3/00*
U.S. Cl. 340—347 DD **18 Claims**



1. Apparatus connected to a data bus for producing clocking pulses from an asynchronously transmitted binary code word having a synchronizing wave form followed by a data word having at least one voltage level transition for said wave form and each said data bit comprising:

detection means responsive to said synchronizing wave form for producing a synchronizing detection signal;

delay means responsive to each said detection signal for producing a delayed detection signal; and

coincidence means connected to said code word bus, said detection means and said delay means for providing a clock signal upon the coincidence of a said voltage level transition, a said detection signal and a said delayed detection signal.

4,449,120

METHOD FOR AMPLIFYING MULTIPLEXED SIGNALS THROUGH DIFFERENT GAIN AMPLIFICATION UNITS FOR SELECTING AN OPTIMUM GAIN SIGNAL AND DEVICE THEREFORE

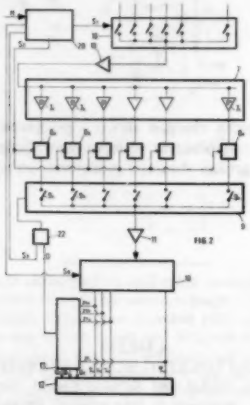
Joseph Rialan, Meudon, and Jacques Cretin, Le Chesnay, both of France, assignors to Institut Francais du Petrol, Rueil-Malmaison, France

Continuation of Ser. No. 95,124, Nov. 16, 1979. This application Feb. 10, 1982, Ser. No. 347,680

Claims priority, application France, Nov. 17, 1978, 78 32703

Int. Cl.³ H03K *13/02*

U.S. Cl. 340—347 AD 16 Claims



1. In a method for amplifying multiplexed analog signals having amplitudes subject to large variations, such that the gain amplification of the signals is optimized for subsequent digitization in an analog-to-digital converter and recording thereof, the method comprising simultaneously and separately amplifying each analog signal received, in parallel connected amplifying means, to different specified gain levels for obtaining a plurality of amplified analog signals corresponding to predetermined amplification gains, each predetermined gain being different from the others, selecting the optimum gain amplified analog signal, and transmitting said optimum gain signal by switching means to the analog-to-digital converter for digitization therein and subsequent storage, the improvement comprising performing the selecting by means of the following sequential steps:

(a) controlling the switching means to transmit one of the amplified analog signals from a predetermined one of said parallel connected amplifying means to the analog-to-digital converter for digitizing therein;

(b) generating a specific gain code signal from said digitized amplified analog signal transmitted from said predetermined one of said amplifying means; and

(c) controlling the switching means by supplying said specific gain code signal thereto and thereby causing said switching means to transmit the optimum gain amplified analog signal from the corresponding one of said plural amplifying means, whereby the optimum level amplified analog signal for the analog-to-digital converter is obtained in a rapid manner.

4,449,121

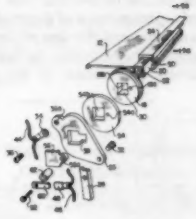
JALOUSIE WITH INTEGRAL ALARM CIRCUIT

Jesus M. Sosa, Interamericana 773 University Gardens, Rio Piedras, P.R. 00927

Filed Nov. 10, 1981, Ser. No. 319,936

Int. Cl.³ G08B *13/02*

U.S. Cl. 340—550 24 Claims



15. In an alarm system for use in with a jalousie window of the type comprising a plurality of pivotally movable blades, each blade being moved by an associated lever arm, and a movable operating bar connected to the lever arms to open and close the blades, the combination of

alarm circuit means comprising a first conductor, a second conductor, a source of electrical power feeding current to the first and second conductors and an alarm indicating device,

the first conductor energizing a first terminal, the second conductor energizing a second terminal, the first and second terminals defining an alarm circuit opening therebetween;

tube means forming a portion of each blade, at least some of the tube means being connected electrically to one of said conductors;

shaft means associated with each tube means and connected for rotation by a lever arm, at least some of the shaft means being connected electrically to the other of said conductors; and

insulating means between a tube means and a shaft means to normally prevent contact therebetween to maintain the circuit opening.

4,449,122

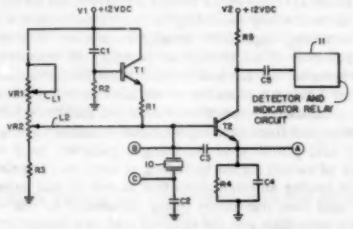
PROXIMITY DETECTOR EMPLOYING A CRYSTAL OSCILLATOR

Melvin H. Whitmer, 2905 31st St., Zion, Ill. 60099

Filed Apr. 24, 1981, Ser. No. 257,212

Int. Cl.³ G08B *13/26, 21/00*

U.S. Cl. 340—562 10 Claims



1. A proximity detecting crystal oscillator circuit comprising:

biasing means for providing a variable voltage including a fixed source of DC voltage, a transistor having a base, collector and emitter, said collector being connected to

said fixed source of voltage, a capacitor coupled between the emitter and base, a resistor coupled between said emitter and ground, a resistor coupled to the collector and to a supply lead, a three-lead range selecting variable resistor having a first lead coupled to the collector of said transistor, a second variable lead coupled to said first lead, and a third lead coupled to a first lead of a second three-lead variable resistor, said second variable resistor having a second lead coupled through a resistor to ground, and a third variable lead coupled to said supply lead;

crystal means including a crystal having first and second leads, said second lead being coupled to said supply lead;

impedance means comprising a first capacitor coupled between said first lead of said crystal and ground, a second capacitor connected on one side of said second lead, a third capacitor connected between the other side of said second capacitor and ground, and a current limiting resistor coupled in electrical parallel with said third capacitor;

output means for providing a crystal oscillation output signal from said crystal means comprising a second transistor having a base, collector and emitter, the base of said second transistor being coupled to the common point between the second and third capacitor, the collector of said second transistor being coupled through a resistor to said fixed source of DC potential and a coupling capacitor coupled to the collector of said second transistor to provide an alternating output signal when said crystal is oscillating, said first, second and third capacitors being set to such values that said crystal is in a selected one of the states of oscillation or non-oscillation;

means coupled to the impedance means for changing the capacitance of the impedance means in response to the proximity of a capacitance means thereto; and

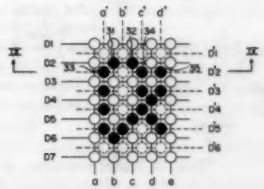
means responsive to the output from said output means for providing an alarm/indicator signal, said means coupled to said impedance means comprising capacitance varying means responsive to the proximity thereto of a body having at least a preselected capacitance for varying the capacitance coupled to said crystal means to alternatively instantaneously initiate or terminate oscillation produced by said crystal means independently of the rate of movement of the body relative to said means for varying the capacitance coupled to said crystal means.

4,449,123

DOT MATRIX TYPE MULTI-LAYER LIQUID CRYSTAL DISPLAY DEVICE

Yoshinobu Muranaga, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Dec. 1, 1980, Ser. No. 211,745
Claims priority, application Japan, Dec. 14, 1979, 54-162598
Int. Cl.³ G09G 3/36
U.S. Cl. 340—716 **8 Claims**



1. A dot matrix type multi-layer liquid crystal display device comprising:

a liquid crystal display unit including at least two liquid crystal display sections, each liquid crystal display section including a liquid crystal sandwiched between two transparent base plates, and transparent electrodes arranged in the form of a dot matrix pattern, said transparent electrodes being provided on a transparent base plate, said dot matrix patterns of each liquid crystal display section having a plurality of rows and columns of dots, said rows and columns extending horizontally and vertically, respectively, in the plane of the respective display section;

means for arranging said liquid crystal display sections one above another such that the transparent electrodes of one liquid crystal display section are disposed without overlapping the transparent electrodes of the other liquid crystal display section when viewing in the vertical diection with respect to said transparent base plates, and said transparent electrodes of said one liquid display section projecting into the horizontal and vertical interstices between the transparent electrodes of the other liquid crystal display section when viewing in the horizontal direction with respect to said transparent base plates;

means for supplying a common drive signal to the transparent electrodes of one of said crystal display sections; and

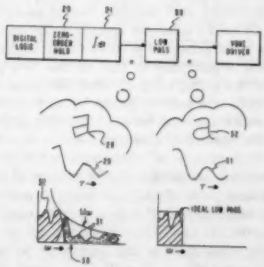
at least two decoding means coupled respectively to the liquid crystal display sections, said decoding means each decoding input data representing a character, a numeral of a symbol in synchronism with said common drive signal and supplying segment drive signals to the transparent electrodes of the respective liquid crystal display sections.

4,449,124

PRECOMPENSATED STROKE CATHODE RAY TUBE DISPLAY SYSTEM APPARATUS AND METHOD

Albert D. Edgar, Austin, Tex., assignor to International Business Machines Corp., Armonk, N.Y.

Filed Dec. 30, 1980, Ser. No. 221,221
Int. Cl.³ G09G 1/14
U.S. Cl. 340—739 **10 Claims**



1. In a stroke display system for the display of images the improvement comprising in combination:

digital means providing a sequential digital signal pattern at a selected stroke frequency, said digital signal pattern being a function of the linear image to be displayed;

means to convert said digital signal pattern into a sequential analog voltage pattern;

beam deflection means;

analog filter means for filtering said analog voltage pattern; and

means for coupling the filtered analog voltage pattern to said beam deflection means to drive said deflection means;

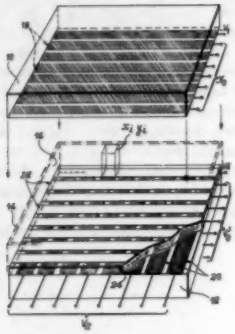
said filter means substantially eliminating the effect on the deflected beam of the harmonic sidebands of said selected stroke frequency in said analog voltage pattern;

said digital means including means for precorrecting stroke endpoints to an extent necessary to compensate for errors in said filter means and in said beam deflection means.

4,449,125
MATRIX DISPLAY DEVICE

Jean F. Clerc, Meylan, and Jacques Robert, Ville d'Avray, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Dec. 31, 1981, Ser. No. 336,190
Claims priority, application France, Jan. 5, 1981, 81 00049
Int. Cl.³ G09G 3/36
U.S. Cl. 340—752 7 Claims



1. A matrix display device comprising a display cell constituted by two transparent insulating walls and by a material incorporating a plurality of zones distributed in matrix-like manner and having a first group of p rows of parallel electrodes placed on one of said insulating walls and a second group of q columns of parallel electrodes placed on the other of said insulating walls, said p rows and said q columns crossing one another, a zone x_i/y_j being defined by the region of the material covered by row x_i in which i is an integer such that $1 \leq i \leq p$, and by column y_j in which j is an integer such that $1 \leq j \leq q$, and means making it possible to supply excitation signals to the electrodes, said material having an optical property dependent on said excitation signals, wherein the device also comprises a third group of p rows of parallel electrodes, whose orientation is identical to that of the first group and placed on the second group of electrodes, whilst being electrically insulated from said second group by an insulating layer, so that the material is inserted between the first group of electrodes and the third group of electrodes and is in contact with said first and third groups of electrodes wherein the third group of electrodes is in the form of a matrix of point electrodes, each of said point electrodes being provided with a switch being operable to one of join said each point electrode to a constant potential conductor common to all the point electrodes of the same row in the group or to electrically insulate said each point electrode, with the control of each said switch being effected by a control conductor common to all the point electrodes in the same row of said third group.

4,449,126
ELECTRONIC LOCK DEVICE AND OPTICAL KEY THEREFOR

Valery Pekker, 7 Squire La., Pittsford, N.Y. 14534

Filed Dec. 2, 1981, Ser. No. 326,533
Int. Cl.³ E05B 47/00; H04Q 3/00
U.S. Cl. 340—825.32 5 Claims

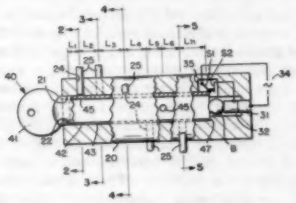
1. An electronic locking device, comprising

a housing having therein an elongate, generally cylindrical keyway,

a locking circuit associated with said housing and including a plurality of light-sensitive elements disposed, when energized, to unlock an associated locking mechanism,

a key having an elongate, generally cylindrically shaped, one-piece shank similar in configuration to said keyway, and having on its outer peripheral surface a chordal flat which extends substantially the full axial length of the shank, and said shank being releasably insertable into an operative position in said keyway substantially coaxially thereof, and with said flat engaging a corresponding flat formed on the inner peripheral surface of said keyway thereby to prevent relative rotation between said shank and said keyway,

a first plurality of separate light pipes mounted in said housing with one end of each pipe registering with one of a like plurality of spaced openings formed in the wall of said keyway intermediate its ends, and with the opposite end of each pipe confronting on one of said light sensitive elements,



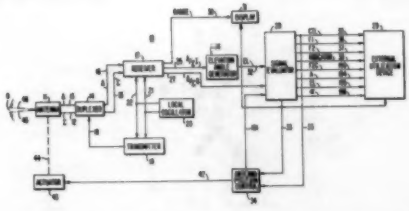
said shank having a light transmissive central section extending continouusly for substantially the full axial length of said shank, and surrounded by an opaque section having therethrough a second plurality of radial openings which are fixed angularly and axially relative to the axis of said shank, and

means operable upon the placement of said shank into its operative position in said keyway to direct light from a common source thereof longitudinally through said shank and radially through said second plurality of openings into said one ends of certain only of said light pipes, thereby to energize only those light-sensitive elements confronting on the opposite ends of said certain light pipes.

4,449,127
SYSTEM AND METHOD FOR TRACKING TARGETS IN A MULTIPATH ENVIRONMENT

José A. Sanchez, Pasadena, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 10, 1981, Ser. No. 242,514
Int. Cl.³ G01S 13/44
U.S. Cl. 343—7 A 54 Claims



1. A method for determining the presence of multipath conditions when tracking a target with a radar comprising the steps of:

transmitting a first signal with an antenna having a first predetermined beamwidth and directed in a first direction towards said target;

receiving target reflected first signals with said antenna directed in said first direction;

generating a first elevation signal from said target reflected first signals;

transmitting a second signal with an antenna having a second predetermined beamwidth and directed in a second direction towards said target, said second direction being angularly offset in elevation from said first direction by a predetermined angle;

receiving target reflected second signals with said antenna directed in said second direction;

generating a second elevation signal from said target reflected second signals;

subtracting said first and second elevation signals to provide an elevation difference signal; and

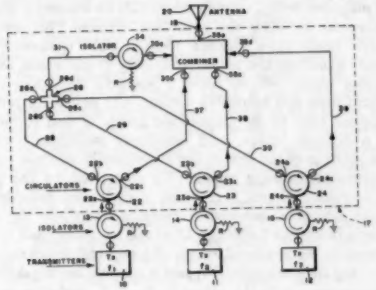
generating a first signal indicative of multipath conditions at times said elevation difference signal exceeds a first predetermined value.

4,449,128

RADIO FREQUENCY TRANSMITTER COUPLING CIRCUIT

Colin B. Weir, Franklin, Mass., assignor to GTE Products Corporation, Stamford, Conn.

Filed Mar. 22, 1982, Ser. No. 360,877
Int. Cl.³ H01Q *5/00*
U.S. Cl. 343—858 **8 Claims**



1. A circuit for coupling an antenna to the outputs of at least three transmitters comprising

first, second and third circulators, each of said circulators having first, second and third ports with said first and second ports being adjacent and said second and third ports being adjacent, adjacent ports of each circulator being nonreciprocally connected, the first ports of said circulators being connected to said outputs, respectively, of the transmitters,

a connector having first, second, third and fourth ports, the impedance at each of said ports of the connector being the same whereby a 3 to 1 voltage standing wave ratio is presented to any one port thereof by the other three ports thereof,

a power combiner having first, second, third and fourth input ports and an output port,

means for connecting the first port of said connector to the first port of said combiner,

means for connecting the second ports of said circulators with equal phase delays to the second, third and fourth ports, respectively, of said connector, and

means for connecting the third ports of said circulators with equal phase delays to the second, third and fourth ports, respectively, of said combiner,

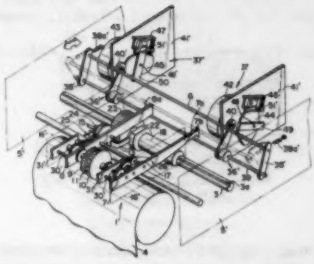
said output port of said combiner being connected to said antenna.

4,449,129

MULTIPLE POSITION RECORDER

Toshiaki Uesugi; Kazutaka Ogitani, and Toshikazu Inden, all of Oimachi, Japan, assignors to Chino Works Ltd., Saitama, Japan

Filed Mar. 15, 1982, Ser. No. 357,898
Claims priority, application Japan, Mar. 20, 1981, 56-39602
Int. Cl.³ G01D *9/28*
U.S. Cl. 346—61 **1 Claim**



1. In a multiple position recorder having a carriage capable of controlled movement in a direction substantially perpendicular to the direction of travel of recording paper in accordance with an input control value;

a figure print wheel and a dot print wheel, each disposed inside said carriage and descending to sequentially perform a predetermined at least one of a figure print recording and dot print recording on said recording paper;

a figure print lever and a dot print lever pivotably attached inside said carrier so as to be capable of rocking at least one of said figure print lever, and having said figure print wheel and said dot print wheel pivotably attached at one end of each of said levers, respectively;

and figure print wheel and said dot print wheel being operatively interlocked with a driving shaft extending in a moving direction of said carriage; and

a check bar driven to rock and engage with the other end of said figure print lever and with the other end of said dot print lever in accordance with the rocking position thereof, thereby controlling the vertical descension of at least one of said figure print wheel and said dot print wheel;

the improvement which comprises position detectors connected to said driving shaft for detecting the positions of printed dots and printed figures in synchronism with said driving shaft;

a group of selection switches selected by an external operation;

a dot print control motor driven by a print control circuit for a predetermined period when a output of a selected switch of said group of selection switches coincides with the output of said position detector;

a figure and dot print check cam rotated by said dot print control motor and rocking said check bar to thereby effect said vertical descension of at least one of said dot print wheel and said figure print wheel;

a figure print gap selection circuit for detecting position change-over signals obtained from said position detectors and generating a signal whenever said detected change-over signals equal a predetermined value;

a figure print control motor driven for a predetermined period by the output signal of said figure print gap selection circuit; and

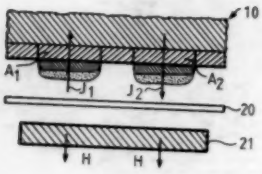
a figure print check cam rotated by said figure print control motor to rock said check bar to thereby affect said vertical discension of at least one of said dot print wheel and said figure print wheel.

4,449,130

PROCESS AND MACHINE FOR MAGNETOGRAPHIC PRINTING (I)

Jean Magnenet, Belfort, France, assignor to Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme), Paris, France

Filed May 20, 1982, Ser. No. 380,356
Claims priority, application France, Dec. 23, 1981, 81 24056
Int. Cl.³ G01D *15/12*
U.S. Cl. 346—74.7 **11 Claims**



6. A magnetographic printing machine for printing an image in two preselected colors on a print carrier comprising a recording element (**10**) having a magnetic recording surface, a plurality of magnetic heads (**13-1** through **13-n**) controlled by electric pulses and adapted to magnetize said recording surface in response to said pulses in a direction perpendicular to said surface so as to produce thereon a group of magnetized points (A), driving means (**25**) for bringing about a relative displacement between the recording element and the magnetic heads (**13***a*–**13***n*), pulse generator means (**28**) for selectively transmitting electrical pulses to said heads, applicator means (**40**) to allow a powdery developer to be deposited onto said recording surface, said developer containing particles whose shade is one of the two preselected colors and remaining applied only to the magnetized points of said surface in order to produce a powder image, and a transfer station (**44 45**) to transfer said powder image to a print carrier; and

current-reversing means (**27**) connected between the magnetic heads (**13-1** through **13-n**) and the pulse generator (**26**) for selectively reversing the curent direction of the pulses emitted by said generator so as to produce on the recording surface a latent magnetic image whose magnetic points have the same intensity of magnetization (J_1, J_2) but with opposite polarities, the magnetic polarity of the points intended to produce powder-image parts in one of said colors being opposite to that of the points intended to produce the other parts of said image

a second applicator means (**42**) located between the transfer station (**44, 45**) and the first applicator means (**40**) for depositing a second powdery developer on said recording surface, said second developer containing particles whose shade is that of the other of said colors, said second developer remaining applied only to the magnetized points of said surface and being superimposed on the first powdery developer; and

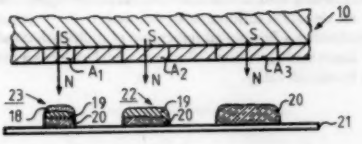
magnetic-field generator means (**21**) at the transfer station for applying a constant magnetic field to said recording surface in a direction perpendicular to said surface, the amplitude (H) and the direction of said magnetic field being such as to reduce the intensity of magnetization of the magnetized points intended to produce on the carrier powder image parts whose color is that of said first powdery developer and to increase the intensity of magnetization of the other magnetized points, so that the sole second developer, which has been deposited onto the points whose magnetizations have been increased, is transferred to the print carrier, while the two developers, which have been deposited onto the points whose magnetizations have been reduced are transferred to said carrier in superimposed layers.

4,449,131

PROCESS AND MACHINE FOR MAGNETOGRAPHIC PRINTING (III)

Jean Magnenet, Belfort, France, assignor to Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme), Paris, France

Filed May 20, 1982, Ser. No. 380,358
Claims priority, application France, Dec. 23, 1981, 81 24059
Int. Cl.³ G01D *15/12*
U.S. Cl. 346—74.7 **9 Claims**



6. A magnetographic printer for obtaining on a carrier an image in p previously chosen colors, p being a whole integer equal to at least 2, comprising a recording element (**10**) having a magnetic recording surface, a plurality of magnetic heads (**13-1** through **13-n**) controlled by electric pulses and adapted to magnetize said recording surface in response to said pulses in a direction perpendicular to said surface so as to form a group of magnetized points (A) thereon which produce a latent magnetic image, driving means (**25**) for causing a relative displacement between the recording element (**10**) and the magnetic heads (**13-a** through **13-n**), a pulse generator (**26**) adapted to emit electric pulses selectively to said heads, and an applicator means (**40**) to allow a powdery developer to be deposited onto said recording surface, said developer remaining applied only to the magnetized points of said surface to form a powder image, said developer including particles whose shade is of the first of the p previously selected colors,

frequency-generating means (**27**) controlled by the pulse generator (**26**) and, in response to each pulse provided by said generator, adapted to energize selectively the magnetic heads (**13-1** through **13-n**) and to enable each of said heads to be energized by one of p periodic direct currents having the same intensity, said p currents having different frequencies with the values $f_1, f_2 \ldots f_p$, and thus to produce on the recording surface a latent magnetic image whose magnetized points (such as A_1, A_2, A_3) have the same magnetic polarity but different intensities of magnetization (J_1, J_2, J_3), said points having different sizes $L_1, L_2, \ldots L_p$, such that $L_1 < L_2 \ldots < L_p$,

each of said values being associated with a corresponding one of said p colors, such that the magnetized points, intended to produce image parts which, on the print carrier (**21**), appear in the same color, all having the same size;

(p-1) other applicator means (**42, 44**) distributed along the path followed by the recording surface during its displacement, each of said applicator means enabling the depositing, on each magnetized point of said surface, of a layer of each of the (p-1) other powdery developers, each of said (p-1) developers having as a shade one each of said colors other than the first color;

(p-1) retouching means (**41, 43**) each fitted downstream, in relation to the direction of surface displacement, to each of said applicator means (**40, 42**), except the last one (**44**), the first of said retouching means (**41**) being arranged so as to removing the first developer (**18**) from the magnetized points (such as A_2, A_3) whose size is greater than L_1, the second retouching means (**43**) being arranged to remove the second developer (**19**) from the magnetized points (such as A) whose size is greater than L_2, and

a transfer station (**45**) fitted downstream to the last applicator means (**49**) to transfer to the print carrier practically all the various developer layers covering the magnetized

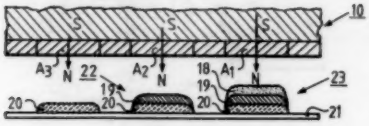
points of the surface when said points move past said last applicator means.

4,449,132

PROCESS AND MACHINE FOR MAGNETOGRAPHIC PRINTING (II)

Jean Magnenet, Belfort, France, assignor to Compagnie Internationale pour l'Informatique Cii-Honeywell Bull, Paris, France

Filed May 20, 1982, Ser. No. 380,404
Claims priority, application France, Dec. 23, 1981, 81 24055
Int. Cl.³ G01D *15/12*
U.S. Cl. 346—74.7 **9 Claims**



6. A magnetographic printer for obtaining on a carrier an image in p previously chosen colors, p being a whole integer equal to at least 2, comprising a recording element (10) having a magnetic recording surface, a plurality of magnetic heads (13-1 through 13-n) controlled by electric pulses and adapted to magnetize said recording surface in response to said pulses in a direction perpendicular to said surface so as to form a group of magnetized points (A) thereon which produce a latent magnetic image, driving means (25) for causing a relative displacement between the recording element (10) and the magnetic heads (13-a through 13-n), a pulse generator (26) adapted to emit electric pulses selectively to said heads, and an applicator means (40) to allow a powdery developer to be deposited onto said recording surface, said developer remaining applied only to the magnetized points of said surface to form a powder image, said developer including particles whose shade is of the first of the p previously selected colors,

electric current-calibrating means (27) connected between the pulse generator (26) and each of the heads (13-1 through 13-n) so as to allow each of the current pulses emitted by said generator to be adjusted selectively to one of the p predetermined amplitude values and thus to form on the recording surface a latent magnetic image whose magnetized points (such as A_1, A_2, A_3) exhibit the same magnetic polarity but have different intensities of magnetization valued as J_1, J_2, J_3 . . . J_p, each of said values $J_1 > J_2 > J_3 \ldots > J_p$, being associated with a corresponding one of said p values, such that the magnetized points, intended to produce image parts which, on the print carrier (21), appear in the same color, all having the same intensity of magnetization;

(p−1) other applicator means (42, 44) distributed along the path followed by the recording surface in the course of its displacement, each of said other applicator means capable of depositing onto each magnetized point of said surface a layer of each one of the (p−1) other powdery developers, each of said (p−1) developers having as a shade one each of said colors other than the first color;

(p−1) retouching means (41, 43) each fitted downstream, in relation to the direction of surface displacement, to each of said applicator means (40, 42), except the last one (44), the first of said retouching means (41) being arranged so as to remove the first developer (18) from the magnetized points (such as A_2, A_3) whose intensity of magnetization is less than J_1, the second retouching means (43) being arranged so as to remove the second developer (19) from the magnetized points (such as A_3) whose intensity of magnetization is less than J_2, and

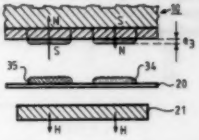
a transfer station (45) fitted downstream to the last applicator means (49) to transfer to the print carrier (21) all the various developer (18, 19, 20) layers which cover the magnetized points of the surface when said points move past said last applicator means.

4,449,133

PROCESS AND MACHINE FOR MAGNETOGRAPHIC PRINTING (IV)

Jean-Jacques Eltgen, Danjoutin, France, assignor to Compagnie Internationale pour L'Informatique CII-Honeywell Bull (Societe Anonyme), Paris, France

Filed May 20, 1982, Ser. No. 380,406
Claims priority, application France, Dec. 23, 1981, 81 24060
Int. Cl.³ G01D *15/12*
U.S. Cl. 346—74.7 **8 Claims**



3. A magnetographic printing machine for obtaining on a carrier an image in two preselected colors comprising a recording element (10) having a magnetic recording surface, a plurality of magnetic heads (13-1 through 13-n) connected to be controlled by electric pulses and to magnetize said recording surface in response to said pulses in a direction perpendicular to said surface so as to produce thereon a group of magnetized points (A) which constitute a latent magnetic image, drive mechanism (25) adapted to bring about a relative displacement between the recording element and the magnetic heads, a pulse generator (26) connected to apply its electric output pulses selectively to said heads, an applicator means (40) for depositing a powdery developer onto said recording surface, said developer remaining applied only to the magnetized points of said surface in order to produce a powder image, a transfer station (41) for transferring said powder image to a print carrier (20), said first developer containing particles whose shade is one of the two preselected colors;

current-calibrating and reversing means (27) disposed between the magnetic heads (13-1 through 13-n) and the pulse generator (26) in order, on the one hand, to selectively reverse the current direction of the generator output pulses and, on the other, to adjust said pulses selectively to one of two values of predetermined amplitude and thus to produce on the recording surface a latent magnetic image whose magnetized amplitudes exhibit magnetization intensities of different amplitudes and of opposite magnetic polarities, the magnetized points adapted to produce images or parts thereof which, on the carrier, must appear in one of said colors all having magnetization intensities of the same amplitude J_1 and in the same direction, the magnetic polarity of said points being opposite to that of other magnetized points, said other magnetized points all having magnetization intensities of the same amplitude J_2, such that $J_2 < J_1$;

a first retouching means (41) located, with respect to the direction of movement of the surface, downstream of said applicator means (40) and designed to dislodge said first developer from the magnetized points whose magnetization intensity is less than J_1;

a second applicator means (42) located between the transfer station (45) and the first applicator means (40) designed to deposit a second powdery developer onto said recording surface, said second developer containing particles whose shade is that of the other of said colors, said second devel-

oper remaining applied only to the magnetized points of said surface; and

a second retouching means (43) downstream of said second applicator means (42) and comprising a magnetic field generator (56) to apply a constant magnetic field to said recording surface, said field being oriented in a direction opposite to the magnetization intensity J_1, the amplitude of said field being designed to modify the amplitudes of the magnetization intensities of the magnetized points and to render them practically equal when said magnetized points move past said second retouching means (43) so that, following said passage, each of the magnetized points, whose magnetization intensity was equal to J_2, is coated with a single layer of the second developer, while each of the magnetized points, whose magnetization intensity was equal to J_1, is coated with a single layer of the first developer, both developers thus forming a powder image in two colors on the recording surface.

4,449,134

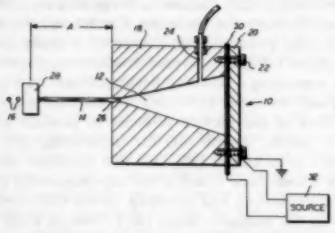
COMPOSITE INK JET DRIVERS

Doyle P. Skinner, Jr., Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 19, 1982, Ser. No. 369,683

Int. Cl.³ G01D *15/18*

U.S. Cl. 346—75 **8 Claims**



1. A method of fabricating a composite ink jet drive member comprising the steps of:

forming a planar base layer of polymeric material;

applying a first, substantially uniformly thick layer of discrete particles of piezoelectric ceramic material to said base layer;

covering said first layer of ceramic particles with a second planar layer of polymeric material to form a sandwich of ceramic particles between layers of polymeric material;

exerting a pressure on said sandwich of ceramic particles at an elevated temperature to form a composite drive member having two outer surfaces, so that said layers of polymeric material are squeezed towards each other to fill interstices between said ceramic particles while concurrently causing the ceramic particles to be continuously connected throughout the thickness of the composite drive member in the direction that the pressure is applied, said ceramic particles adjacent the outer surfaces of the composite drive member having surface portions which extend through the polymeric material for electrical contact at the outer surfaces of the composite drive member; and

poling said composite drive member with an electric field to cause a piezoelectric response therefrom.

4,449,135

INK EJECTION HEAD

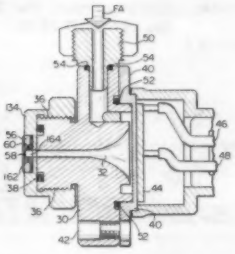
Michio Umezawa, Kawasaki, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Dec. 13, 1982, Ser. No. 449,038

Claims priority, application Japan, Dec. 23, 1981, 56-207139; Dec. 23, 1981, 56-207140

Int. Cl.³ G01D *15/18*

U.S. Cl. 346—75 **5 Claims**



1. An ink ejection head having a body and a nozzle member fixed to the head through a nozzle holder, the nozzle member being machined to be formed with a generally cup-shaped recess first and then a nozzle hole, comprising:

an ink chamber formed within the head body to be supplied with ink from outside the head;

a spacer for filling a space defined between the wall of the cup-shaped recess and the nozzle holder; and

a through passageway formed in said spacer to provide fluid communication between the ink chamber and the nozzle hole.

4,449,136

DRIVING SYSTEM FOR THERMAL RECORDING HEAD

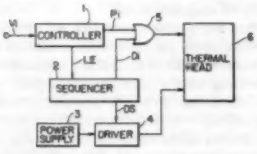
Hátuhiko Moriguchi, and Takashi Ohmori, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Mar. 15, 1982, Ser. No. 357,936

Claims priority, application Japan, Mar. 16, 1981, 56-36498

Int. Cl.³ G01D *15/10*; H05B *3/00*

U.S. Cl. 346—76 PH **9 Claims**



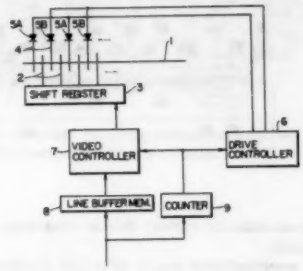
1. In a driving system for a thermal recording head, the timing of line information recording of which is non-periodic, the improvement comprising waste heat supplement signal generating means for periodically generating a waste heat supplement signal of uniform pulse width during an idle time between adjacent line recording operations, and a driver driven synchronously with said waste heat supplement signal, said thermal head being periodically excited with impressed energy to an extent so as not to cause recording during the idle time between line recording operations.

4,449,137

DRIVING METHOD FOR THERMAL RECORDING HEAD

Toshiharu Inui; Haruhiko Moriguchi, and Takashi Ohmori, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Mar. 23, 1982, Ser. No. 361,158
Claims priority, application Japan, Mar. 24, 1981, 56-41715
Int. Cl.³ G01D 15/10
U.S. Cl. 346—76 PH 6 Claims



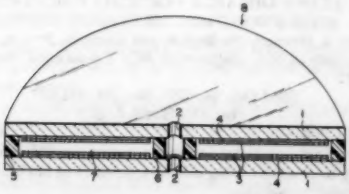
1. In a method of driving a thermal recording head of a thermal recorder which is provided with a plurality of heating elements actuated selectively according to a picture signal, the improvement comprising; examining a picture signal of each line to discriminate whether it includes information to be printed, and preheating said heating elements by driving them up to a predetermined temperature only when said picture signal contains no information to be printed, said predetermined temperature being selected so as to be less than a thermal recording temperature.

4,449,138

INFORMATION RECORDING MEDIUM

Hideo Ando, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Apr. 13, 1982, Ser. No. 368,088
Claims priority, application Japan, Apr. 15, 1981, 56-56718; Apr. 15, 1981, 56-56719; Apr. 16, 1981, 56-57552; Apr. 16, 1981, 56-57553; Apr. 17, 1981, 56-57890; Apr. 20, 1981, 56-59537
Int. Cl.³ G01D 15/34
U.S. Cl. 346—135.1 20 Claims



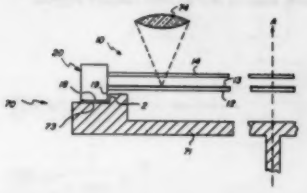
1. An information recording medium, comprising a pair of disk-shaped transparent substrates disposed apart from each other; intermediate transparent protective layers each formed on the inner surface of the substrate; and optical information recording layers each consisting of an energy-absorbing layer or light reflective layer and formed on the intermediate transparent layer.

4,449,139

OPTICAL DISC UNIT, FABRICATION METHOD AND COOPERATING WRITE AND/OR READ APPARATUS

Frederick F. Geyer, and Eric M. Leonard, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 264,313, May 18, 1981, Pat. No. 4,365,258. This application Aug. 26, 1982, Ser. No. 411,773
The portion of the term of this patent subsequent to Dec. 21, 1999, has been disclaimed.
Int. Cl.³ G01D 15/32
U.S. Cl. 346—137 27 Claims



1. For use with optical disc apparatus of the kind adapted for the optical writing and/or reading of high density information and including lens means for focusing write and/or read light within an apparatus focal zone and turntable means having a surface which is rotatable about an axis in a first plane that is substantially normal to said axis and accurately located with respect to said lens means, an optical disc-unit comprising:

(a) an optical disc including a flexible, disc-shaped support and having a write and/or read portion;

(b) a disc cover opposing said record area and comprising a flexible, disc-shaped sheet which is highly transparent to such writing and/or reading light wavelengths; and

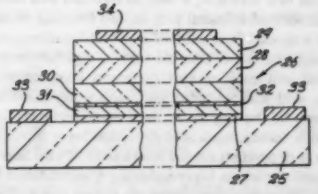
(c) annular retaining means, engaging said support and said sheet around their peripheral regions, for holding the write and/or read optical disc portions and opposing portions of the cover sheet in spaced relation, said disc-unit including means for positioning said unit on said surface of such apparatus turntable means so that said write and/or read portion is accurately located with respect to such apparatus focal zone.

4,449,140

SEMI-CONDUCTOR BARRIER SWITCHING DEVICES

Kenneth Board, Mayals, England, assignor to National Research Development Corporation, London, England

Filed Dec. 24, 1981, Ser. No. 334,382
Int. Cl.³ H01L 29/00, 29/90, 29/48, 29/12
U.S. Cl. 357—7 13 Claims



1. A switching device comprising:

a body of semi-conductor material,

means for injecting carriers of one type into the body,

a first terminal coupled to the said means,

a barrier region of the body formed by semi-conductor material having the said one type of carriers as majority carriers, and barrier region separating adjacent first and

second further regions of the body, with the first region between the said means and the barrier region, and

a second terminal coupled to the body on that side of the second region which is remote from the barrier region,

the dimensions of the barrier region and its composition in relation to the first and second further regions being such that when the device is unbiassed the barrier region is substantially depleted of the said majority carriers, and

the concentration of any majority carriers of opposite type to the said one type in the first further region being not substantially more than twice as great, when the device is unbiassed, than in the second further region.

4,449,141

VARIABLE CAPACITOR

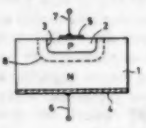
Yasuo Sato, and Takamasa Sakai, both of Tokyo, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Filed Dec. 16, 1981, Ser. No. 331,359

Claims priority, application Japan, Dec. 18, 1980, 55-180060

Int. Cl.³ H01L *29/92*

U.S. Cl. 357—14 **19 Claims**



10. A variable capacitor, comprising: a semiconductor substrate, said substrate having a different carrier concentration in the region of each of a plurality of spaced first locations thereon; plural depletion layer control electrode means, each said depletion layer control electrode means being provided on said substrate at a respective one of said first locations; plural capacitance electrode means, each said capacitance electrode means being provided on said substrate in the region of a respective one of said first locations and being connected to a common first terminal; a second terminal and means connecting said second terminal to a second location on said substrate which is spaced from each of said first locations; and means for applying a common variable bias voltage between said second terminal and each of said depletion layer control electrode means, said bias voltage producing a depletion layer in said substrate in the region of each said depletion layer control electrode means, each said depletion layer having a thickness which is dependent on the magnitude of said bias voltage and each said depletion layer inducing a capacitance between the associated capacitance electrode means and said second location, the magnitude of such capacitance being dependent on the magnitude of said bias voltage and on the carrier concentration of said substrate in the region of the associated capacitance electrode means, the total capacitance provided between said first and second terminals being the sum of the capacitances between said second terminal and each of said capacitance electrode means and decreasing progressively as said bias voltage is increased.

4,449,142

SEMICONDUCTOR MEMORY DEVICE

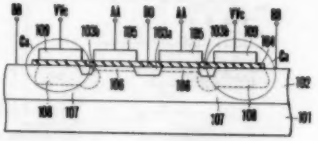
Toshiaki Tsuchiya, Iruma, and Manabu Itsumi, Hoya, both of Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo, Japan

Filed Feb. 2, 1981, Ser. No. 230,460

Claims priority, application Japan, Oct. 8, 1980, 55-139917; Oct. 25, 1980, 55-149562

Int. Cl.³ H01L *27/04*; G11C *11/40*

U.S. Cl. 357—23 **13 Claims**



1. A semiconductor memory device comprising:

a substrate;

a first semiconductor region of a first conductivity type formed on said substrate;

a gate insulating film formed on said first semiconductor region;

a first gate electrode disposed on said gate insulating film;

a second semiconductor region of a second conductivity type formed in said first semiconductor region in relation with an end of said gate electrode;

a first charge storage portion formed apart from said second semiconductor region and in relation with the other end of said gate electrode; and

means for detecting conductivity of a buried channel formed between said substrate and a space charge layer which is formed in said first semiconductor region in accordance with an amount of electric charge supplied to said charge storage portion, said buried channel detecting means comprising a first external terminal connected to said second semiconductor region and a second external terminal connected to a portion of said first semiconductor region which is opposed to said gate electrode with said charge storage portion interposed therebetween, wherein the junction formed between said first and second semiconductor regions is forward biased during read-out.

4,449,143

TRANSCODEABLE VERTICALLY SCANNED HIGH-DEFINITION TELEVISION SYSTEM

Robert A. Dischert, Burlington, and Kerns H. Powers, Princeton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Oct. 26, 1981, Ser. No. 314,847

Int. Cl.³ H04N *9/42*

U.S. Cl. 358—11 **15 Claims**

1. A mastering television video system adaptable for transcoding to systems having different numbers of horizontal lines per frame, comprising:

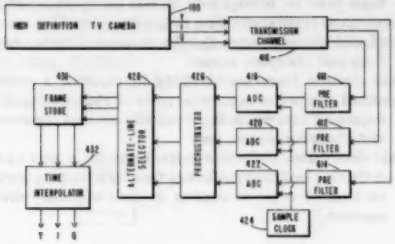
a controllable transducer for converting an image into a video signal by successive scans of the image;

scan control means coupled to said transducer for causing said transducer to scan said image in a vertical direction;

conversion means for converting from vertical to horizontal scan having a preselected number of horizontal lines per frame; and

coupling means for coupling said scan control means with

said conversion means, said coupling means comprising prefiltering means for reducing aliasing resulting from the



vertical-direction sampling represented by said conversion from vertical to horizontal scan.

4,449,144

APPARATUS FOR DETECTING MOVING BODY

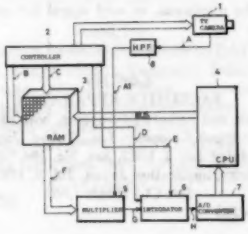
Masatoshi Suzaki, Shiga, Japan, assignor to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Jun. 25, 1982, Ser. No. 392,246

Claims priority, application Japan, Jun. 26, 1981, 56-100309; Jun. 30, 1981, 56-102698

Int. Cl.³ H04N *3/10*

U.S. Cl. 358—105 **9 Claims**



1. An apparatus for detecting a moving body comprising:

pickup means for picking up an object and delivering video signals thereof,

memory means for storing values of spatial filter function in corresponding relation to the picture elements of the pickup means,

means for successively reading out from the memory means the values of spatial filter function corresponding to the picture elements in synchronism with scanning by the pickup means,

means for multiplying the read-out spatial filter function values by the video signals from the pickup means,

means for integrating the multiplied signals for a required area, and

means for calculating required information as to the object from the result of integration.

4,449,145

INTELLIGENT TELETEXT DECODER

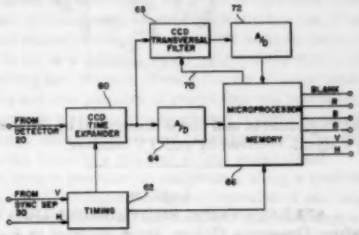
Walter S. Ciciora, Park Ridge, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Continuation of Ser. No. 276,730, Jun. 24, 1981, abandoned, which is a division of Ser. No. 114,930, Jan. 24, 1980, Pat. No. 4,333,109. This application Jun. 13, 1983, Ser. No. 493,129

The portion of the term of this patent subsequent to Jun. 1, 1999, has been disclaimed.

Int. Cl.³ H04N *5/14, 7/04*

U.S. Cl. 358—147 **10 Claims**



1. A machine implemented method for use with a receiver which receives both transmitted digital format data signals and a transmitted reference signal, for equalizing said digital format data signals according to distortion exhibited by said reference signal and decoding said digital format data signals, comprising the steps of:

loading said reference signal into a time base expander having an input and an output in real time; then

applying the reference signal from the output of said time base expander at a selectable rate to another circuit and therein automatically and electronically calculating adjustment signals based on said reference signal for correcting said reference signal;

adjusting a filter having tap weights in accordance with an adjustment signal to obtain weighted taps;

loading said digital format data signals into said filter;

equalizing said digital format data signals in said filter, including generating weighted signals in accordance with the weighted taps and said digital format data signals in said filter thereby to obtain an equalized data signal; and then

decoding said equalized data signal.

4,449,146

INTEGRATOR CIRCUIT FOR SEPARATING VERTICAL SYNC PULSES

Gerald Luna, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 29, 1980, Ser. No. 220,614

Int. Cl.³ H04N *5/10*

U.S. Cl. 358—154 **19 Claims**

1. An integrator circuit comprising;

a capacitor,

at least a first current source for discharging said capacitor,

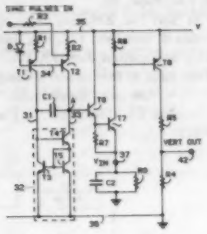
at least a second current source for charging said capacitor,

the magnitude of current provided by said second current source being greater than the magnitude of current provided by said first current source, and

a current mirror circuit having at least first and second current paths coupled to said first and second current sources, respectively.

19. The integrator according to claim **17** wherein

said integrator is incorporated as part of a TV receiver to separate vertical sync pulses from horizontal sync pulses and



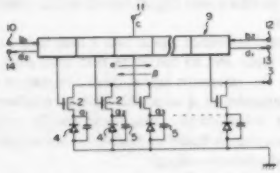
the magnitude of said bias is determined by the strength of a TV signal- received by said TV receiver.

4,449,147

SELF-SCANNING PHOTODIODE ARRAY

Fumihiro Ogasawara, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Nov. 14, 1980, Ser. No. 207,102
Claims priority, application Japan, Nov. 19, 1979, 54-148909
Int. Cl.³ H04N *1/10, 3/12*
U.S. Cl. 358—212 **6 Claims**



1. A photosensor array including a plurality of photosensor elements characterized by comprising scanning means for selectively sequentially scanning the photosensor elements in a forward direction and a reverse direction;

the scanning means comprising a plurality of switch means connected between an output terminal of the array and the respective photosensor elements, shift register means having a plurality of parallel outputs connected to switch terminals of the respective switch means and shift means for shifting a signal through the shift register means, the signal turning on one of the switch means when the signal appears at the respective parallel output of the shift register means.

4,449,148

IMAGE DISPLAY APPARATUS

Shizuo Inohara, Toyonaka; Mitsuya Masuda, Kyoto; Sadahiro Iyehara, Suita; Minoru Ueda, Takatsuki, and Keisuke Yamamoto, Ibaraki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jan. 28, 1982, Ser. No. 343,756
Claims priority, application Japan, Feb. 10, 1981, 56-18783; Feb. 18, 1981, 56-22729
Int. Cl.³ H04N *5/66, 9/12*; H04J *31/20*
U.S. Cl. 358—230 **8 Claims**

1. A video image display apparatus comprising:

an electron beam source for emitting at least an electron beam,

a phosphor screen having a phosphor layer which emits light at impingement by said electron beams,

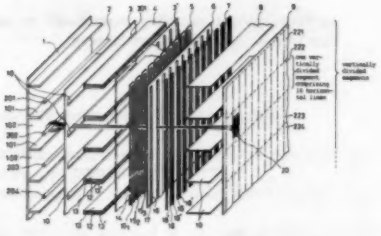
an electron beam convergence means for converging said electron beam in a manner that said electron beam is impinged on said phosphor screen forming a little spot,

an electrostatic deflection means for deflecting said electron beam prior to impingement on said phosphor screen,

an electron beam controlling means for controlling intensity of said electron beam thereby to control light emission from said phorphor screen,

said electron beam source being for emitting a predetermined number of horizontal rows of electron beams, for impinging corresponding vertically divided segments of said phorphor screen, and

said electrostatic deflection means being for at least vertical deflecting said electron beams thereby to display horizontal lines of a plural number in each vertically divided segment,



said electron beam source being for emitting a plural number of electron beams, simultaneously in a line at a time emission, which are disposed horizontally and

said each simultaneously emitted horizontal electron beams being deflected horizontally and vertically,

characterized in that a signal supplying means for supplying a signal for controlling said intensity of said electron beam to said electron beam controlling means,

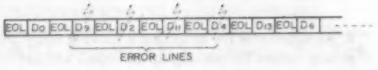
said signal supplying means comprises a pulse width modulation circuit which supplies a pulse signal, the width of which is modulated responding to a video signal information to be displayed, as said signal for controlling said intensity.

4,449,149

FACSIMILE APPARATUS

Mutsuo Ogawa, and Noboru Murayama, both of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jul. 2, 1982, Ser. No. 394,740
Claims priority, application Japan, Jul. 9, 1981, 56-106241
Int. Cl.³ H04N *1/40*
U.S. Cl. 358—280 **8 Claims**



1. A facsimile apparatus including a transmitter, comprising:

a scanner for scanning an original document and producing a continuous train of data carried on successive scan lines, the adjacent scan lines of data being distinguished from each other by an intervening end of line code;

scattering means for scattering the successive lines of data into a predetermined irregular order; and

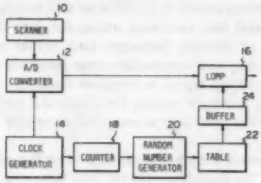
buffer means for storing the scattered scan lines of data and producing the stored data one scan line at a time in such a manner that after the "N" line of stored data has been fed out, the "N+M" line of stored data is fed out, where N and M are integers and M is not larger than +2 and not smaller than +2.

4,449,150

METHOD OF PROCESSING MEDIUM TONE PICTURE

Tomokazu Kato, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Dec. 29, 1981, Ser. No. 335,417
Claims priority, application Japan, Jan. 19, 1981, 56-6151; Jan. 29, 1981, 56-12166
Int. Cl.³ H04N 1/40
U.S. Cl. 358—283 19 Claims



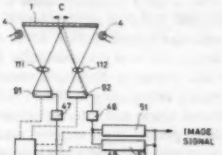
1. A method of processing a medium tone picture constituted by a plurality of picture elements comprising the steps of:
(a) scanning the medium tone picture and detecting the density levels of the picture elements;
(b) providing a plurality of threshold matrices, each matrix having a predetermined number of threshold components arranged in a pattern which is different from each other matrix;
(c) dividing the picture elements into a plurality of groups, each group having the same number of picture elements as the threshold components of each matrix;
(d) selecting one of the matrices at random and comparing the threshold components of the selected one of the matrices with the corresponding picture elements of one of the groups of picture elements respectively; and
(e) determining the density level of each of the picture element to be a black density level when the density level of the picture element is higher than that of the corresponding threshold component and to be a white density level when the density level of the picture element is lower than that of the corresponding threshold component.

4,449,151

SOLID-STATE SCANNING APPARATUS

Takashi Yokota, Tokyo; Shigeru Yamazaki, Tanashi; Yoshiaki Kanmoto, Tokyo; Motoaki Kawazu, Kawasaki; Noboru Murayama, Machida, and Daisuke Abe, Misato, all of Japan, assignors to Ricoh Company, Ltd., Japan

Continuation-in-part of Ser. No. 270,119, Jun. 3, 1981, abandoned. This application Dec. 23, 1982, Ser. No. 452,433
Int. Cl.³ H04N 1/02
U.S. Cl. 358—293 13 Claims



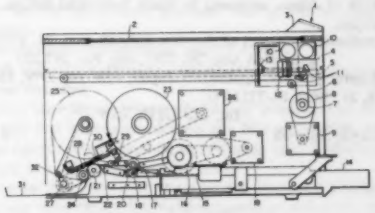
1. A solid-state scanning apparatus for scanning the surface of an original to convert light information into an electrical image signal comprising:
a housing;
holding means fixedly mounted to said housing for holding said original stationarily;
an optical system fixedly mounted on said housing including a solid-state line sensor and focusing means disposed in alignment with said solid-state line sensor which includes a plurality of image sensing devices arranged such that an overlapping scanning section is defined between the two adjacent scanning segments in a full single scanning line scanned by said plurality of image sensing devices;
a plurality of paired first and second storing means, each pair of which is connected to receive image data from the corresponding one of said plurality of image sensing devices;
control means for controlling the mode of operation of said first and second storing means such that while one of said first and second storing means is set is a write-in mode, the other is set in a read-out mode, said control means also controlling the operation of said plurality of image sensing devices and said plurality of paired first and second storing means in a predetermined manner in order to prevent the image information of said overlapping sections from appearing twice in a resulting output image signal;
a mirror system provided to reciprocate along a predetermined path for leading the light information of said original to said solid-state line sensor of said optical system; and
driving means for driving to move said mirror system along said predetermined path in a reciprocating manner.

4,449,152

COPYING MACHINE

Masami Kurata; Fujio Moriguchi; Yoshiki Kikuchi; Haruhiko Moriguchi, and Takashi Ohmori, all of Ebina, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Dec. 10, 1981, Ser. No. 329,468
Claims priority, application Japan, Dec. 10, 1980, 55-174069
Int. Cl.³ H04N 1/22
U.S. Cl. 358—296 21 Claims



1. A thermal recording type copying machine, comprising:
a platen for arranging an original thereon, said original having image information thereon;
a read unit for reading the image information of the original during relative movement of said platen and read unit and for converting the read image into electrical picture signals;
a stationary thermal recording head having heating elements for generating heat in accordance with said electrical picture signals;
conveying means for conveying an ink donor member and a sheet of cut paper in juxtaposition to each other, while being in close contact under pressure, past said heating elements of said thermal recording head; and
means for separating only said cut paper having an image recorded thereon from said ink donor member and for discharging said cut paper in a stacked fashion.

4,449,153

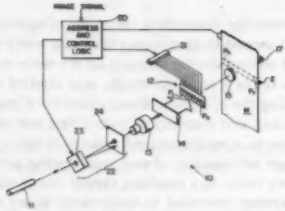
LIGHT VALVE IMAGING APPARATUS AND METHOD HAVING SUPPLEMENTAL EXPOSURE CONTROL

Pin-Seng Tschang, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 16, 1982, Ser. No. 389,121

Int. Cl.³ H01J *40/14*; H04N *1/46, 1/12*; G03G *15/01*

U.S. Cl. 358—296 **8 Claims**



1. In electronic imaging apparatus of the type including (1) a linear light valve array which comprises a plurality of discrete, pixel portions independently activatable between light transmitting, "on," and non-transmitting, "off," conditions by selective application of an electrical field, (2) illuminating means for directing light uniformly toward all said pixel portions of said array and (3) addressing means for independently activating said pixel portions to appropriate "on-off" conditions according to image content of a line to be reproduced thus defining an information-address period, the improvement comprising supplemental exposure control means, positioned to control light passing between said illuminating means and said array and operative within each such information-address period, for modulating the intensity of light from said illuminating means.

4,449,154

SAMPLING TIME CONTROL CIRCUIT FOR USE IN AN AUDIO CASSETTE TAPE DATA PROCESSOR

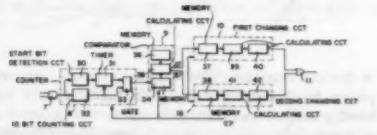
Souichi Ohnishi, Yao, and Kensaku Komai, Yamatokoriyama, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation-in-part of Ser. No. 123,480, Feb. 21, 1980. This application Aug. 28, 1981, Ser. No. 297,357

Claims priority, application Japan, Feb. 21, 1979, 54-19962; Feb. 21, 1979, 54-22314[U]

Int. Cl.³ G11B *5/09*

U.S. Cl. 360—51 **8 Claims**



1. Data reading means for determining a compatible data sampling interval for reading previously recorded data from a cassette tape, said tape having selected initial data thereon representative of actual data sampling intervals corresponding to the recorded speed of ensuing previously recorded data, comprising:

input means for reading out said selected initial data from said cassette tape;

regulating means having reference data sampling interval information stored therein and responsive to said input means for comparing said actual data sampling intervals for said recorded data with said reference data sampling interval information and providing a control signal representative of a compatible data sampling interval for reading ensuing data from said tape; and

data readout means, responsive to said control signal and said ensuing data from said cassette tape, for sampling said ensuing data over said compatible sampling intervals, said data readout means including,

normalized memory means for receiving and storing said control signal,

data receiving means for determining actual perceived data sampling time intervals for said ensuing data,

comparison means responsive to said stored control signal and said data receiving means for determining a condition of identity between said actual perceived data sampling and compatible time intervals and providing an enabling signal in response thereto;

holding memory means for receiving said ensuing data sampled over said compatible sampling time intervals; and

gate means, responsive to said enabling and control signals, for sampling said ensuing data over said compatible sampling time intervals and admitting the sampled data to said holding memory means.

4,449,155

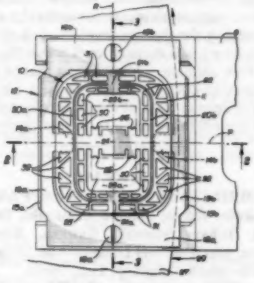
GIMBAL ASSEMBLY FOR FLYING MAGNETIC TRANSDUCER HEADS

Markus Meier, Carpinteria, and David A. Sutton, Santa Ynez, both of Calif., assignors to DMA Systems Corporation, Goleta, Calif.

Filed Nov. 16, 1981, Ser. No. 321,336

Int. Cl.³ G11B *21/20, 5/60*

U.S. Cl. 360—104 **3 Claims**



1. In an apparatus of the type including a transducer head adapted for flying on a fluid bearing in close proximity to a transducing surface and gimbal means to which said head is mounted for flying so as to provide flexural freedom of rotation of said head around predetermined axes parallel to said surface and flexural freedom of translation in the direction of an axis perpendicular to said surface while restraining rotation of said head about said axis perpendicular to said surface and translation of said means in directions parallel to said surface, said gimbal means comprising a thin, resilient, gimbal sheet having an external shape and interior openings defining a first ring attachable to gimbal sheet support means at substantially opposite points on said first ring and a second ring spaced apart from said first ring and attached to it by a pair of webs intersecting said first ring at opposite interior edges between the points at which said first ring is attached to said gimbal sheet support means, said second ring being attached to said transducer head at point between said two webs, the improvement wherein:

both of said first and second rings have material removed therefrom to form openings therein which form a truss-type structure to reduce the stiffness of said gimbal sheet in the direction of said axis perpendicular to said surface

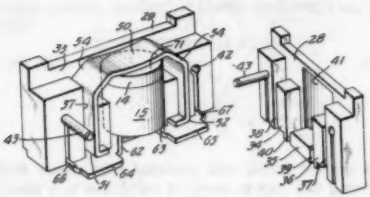
without significantly reducing the rigidity of said gimbal sheet in the plane thereof.

4,449,156

TELEPHONE CENTRAL OFFICE GAS TUBE REPLACEMENT PROTECTOR

Loren A. Singer, Jr., Mamaroneck, N.Y., assignor to Porta Systems Corp., Syosset, N.Y.

Filed Sep. 24, 1982, Ser. No. 422,828
Int. Cl.³ H02H 7/20
U.S. Cl. 361—119 **1 Claim**



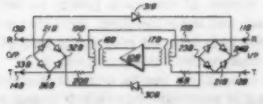
1. In an improved telephone protector module of a type having a channeled housing adapted to be engaged between a pair of resilient spring fingers on a protector block, the improvement comprising: a first contact element positioned within said housing and having an exposed surface thereon projecting externally of said housing to selectively contact one of said pair of spring fingers; a second contact element, positioned within said housing and having a second exposed surface thereon projecting externally in an opposite direction from said housing to simultaneously contact the other of said pair of spring fingers; a gas tube element, and a meltable solder washer disposed within said housing in aligned mutually contacting relation, one end surface of said pellet underlying said exposed surface of said first contact element, and one end of said gas tube element contacting said second contact element; said solder washer maintaining said first and second contacts in mutually spaced relation; whereby upon the engagement of said module between said first and second spring fingers, and the melting of said solder washer, the resultant force between said spring fingers serves to urge portions of said first and second contact elements into mutual contact to establish a path of conductivity bypassing said gas tube element.

4,449,157

SURGE PROTECTION FOR SIGNAL TRANSMISSION SYSTEMS

Peter E. K. Chow, Nepean, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Sep. 27, 1982, Ser. No. 423,609
Int. Cl.³ H02H 9/04, 3/20, 7/20
U.S. Cl. 361—56 **7 Claims**



1. Surge protection means for a signal transmission system having a plurality of transmission lines each comprising a pair of conductors, said protection means comprising:

a first diode bridge having two cathode-anode nodes, each to be connected to a respective one of said pair of conductors of one transmission line;

a second diode bridge having two cathode-anode nodes each to be connected to a respective one of the pair of conductors of a second transmission line and;

a pair of surge diverter devices, one interconnecting a cathode-cathode node of said first bridge and an anode-anode node of said second bridge, the other device interconnecting an anode-anode node of said first bridge and a cathode-cathode node of said second bridge,

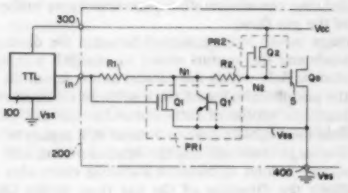
said surge diverter devices being adapted to switch from a high impedance state to a low impedance state when the voltage across the device exceeds a predetermined level.

4,449,158

INPUT PROTECTION CIRCUIT FOR MIS TRANSISTOR

Shigenobu Taira, Aizawakamatsu, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 4, 1981, Ser. No. 327,693
Claims priority, application Japan, Dec. 26, 1980, 55-186868
Int. Cl.³ H02H 9/04
U.S. Cl. 361—91 **7 Claims**



1. An input protection circuit formed on a substrate and connected to a main circuit MIS transistor having a first breakdown voltage, said MIS transistor to be protected from a high voltage applied to an input terminal, said protection circuit comprising:

receiving means for receiving supply voltage;

a first impedance element operatively connected to said input terminal;

a second impedance element operatively connected in series to said first impedance element at a first connecting point and operatively connected to said main circuit MIS transistor at a second connecting point;

first protection means, having a second breakdown voltage greater than said first breakdown voltage and a first mutual conductance, said first protection means including a first transistor and being operatively connected between said receiving means and said first connecting point, for preventing excess voltage at said main circuit MIS transistor; and

second protection means, having an ON and an OFF state, a third breakdown voltage lower than said first breakdown voltage, a second mutual conductance less than said first mutual conductance, said second protection means being operatively connected between said receiving means and said second connecting point at which said second impedance element and said main circuit MIS transistor are connected, for preventing excess voltage at said main circuit MIS transistor;

wherein said second impedance element has an impedance selected such that said second connecting point is at a voltage less than said first breakdown voltage when said second protection means is in said ON state.

4,449,159

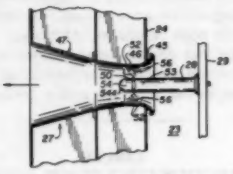
FOCUSING ELECTRODES FOR HIGH-INTENSITY IONIZER STAGE OF ELECTROSTATIC PRECIPITATOR

James J. Schwab, Seattle, Wash., and Owen J. Tassicker, Cupertino, Calif., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Continuation of Ser. No. 785,470, Apr. 7, 1977, abandoned. This application Nov. 13, 1978, Ser. No. 960,339

Int. Cl.³ B03C *3/00*

U.S. Cl. 361—230 **11 Claims**



1. A high-intensity gas ionizer for an electrostatic precipitator comprising:

venturi means for connecting a source of particulate laden gases with the electrostatic precipitator wherein a gas flow occurs through the venturi means;

a discharge electrode comprising a disk mounted within the throat of the venturi means and having a peripheral edge defining a maximum dimension transverse to the direction of the gas flow;

voltage means interconnected between the discharge electrode and the venturi means to establish a high-intensity electric field within the venturi means across the gas flow, the peripheral edge of the discharge electrode having at least one profile of sufficient curvature that the electric field establishes a corona current in a region between the discharge electrode and the venturi means; and

first and second cylindrical focusing electrodes mounted along the direction of the gas flow within the venturi means, extending coaxially in first and second directions away from the discharge electrode, said first focusing electrode extending upstream from said discharge electrode disk beyond said venturi means and said second focusing electrode extending downstream from said discharge electrode disk and terminating in a hemispherical cap, said first and second focusing electrodes being electrically coupled to the discharge electrode and maintained at approximately the same electrical potential as the discharge electrode, having respective diameters less than the maximum transverse dimension of the discharge electrode, and being sized so that corona discharge from the focusing electrodes is substantially non-existent; the first and second focusing electrodes being sized to increase the electric field strength at the fringes of the region of corona current to axially limit the region of corona current and thus reduce the surface area of the venturi means subjected to collection of particulates in the gases.

4,449,160

ARRANGEMENT FOR HOLDING A PART ATTACHED TO A SUPPORT FRAME HELD AGAINST A ROTATABLE MEMBER WHICH IS MOUNTED WITHIN THAT SUPPORT FRAME

Jean-Jacques Binder, Valdoie, and Jean G. Magnenet, Belfort, both of France, assignors to Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme), Paris, France

Filed Dec. 5, 1978, Ser. No. 966,576

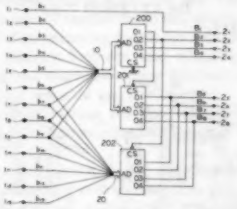
Claims priority, application France, Mar. 24, 1978, 78 08617

Int. Cl.³ G11B *21/16, 5/56, 21/24*; E04G *3/00*

U.S. Cl. 360—104 **9 Claims**

1. In a mechanical apparatus comprising a rigid support frame, a rotatable member mounted within said support frame and a part attached to said support frame, and provided with a sliding surface in contact with said rotatable member, said part having an axis of symmetry perpendicular to said sliding surface and the axis of rotation of said rotatable member, an arrangement for holding said part pressed against said rotatable member, said arrangement comprising:

an universal joint means disposed between said support frame and a first point of said part to attach said part to



said support frame, said universal joint means further allowing said part to move in translation in a direction perpendicular to said sliding surface, and

a return spring element between said support frame and a second point of said part to urge said part against said rotatable member, said first and second points being disposed on opposite sides of the axis of symmetry of said part.

4,449,161

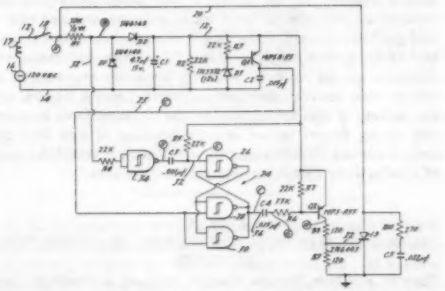
ONE SHOT FIRING CIRCUIT FOR POWER TOOLS

Larry K. Kling, Raleigh, N.C., assignor to The Black & Decker Manufacturing Company, Towson, Md.

Filed Jul. 16, 1982, Ser. No. 398,854

Int. Cl.³ H01H *47/32*

U.S. Cl. 361—152 **33 Claims**



1. A one shot firing circuit for a portable electrical power tool having an inductive load adapted to be connected electrically in series with a source of alternating current electrical power, comprising:

manually operable normally open switch means, connected electrically in series with said inductive load and said source of alternating current electrical power, for controlling the supply of electrical power to both said firing circuit and said inductive load, such that when said normally open switch means is open the path of current flow to said inductive load is interrupted;

controlled conduction means, connected electrically in series with said normally open switch means, said inductive load and said source of alternating current electrical power, for controlling the flow of current through said inductive load after said normally open switch means is closed; and

timing circuit means, connected to said controlled conduction means and responsive to the closing of said normally

open switch means, for providing a predeterminable delay after said normally open switch means is closed before enabling said controlled conduction means to conduct and permit a unidirectional current impulse to flow through said inductive load sufficient to energize said inductive load.

4,449,162

DRIVE CIRCUIT

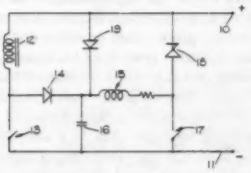
Keith Heppenstall, Greenford, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Nov. 4, 1981, Ser. No. 318,267

Claims priority, application United Kingdom, Dec. 9, 1980, 8039419

Int. Cl.³ H01H *47/32*

U.S. Cl. 361—156 **4 Claims**



1. A drive circuit for an electromagnetic device comprising first and second supply lines for connection to a low voltage d.c. supply, an inductor, first switch means connected between one terminal of said inductor and one of said supply lines, the other terminal of the inductor being connected to the other of said supply lines, a first diode connected between the one terminal of the inductor and one terminal of said device, second switch means connected between the other terminal of the device and said one supply line, and a capacitor connected between said one terminal of the device and said one supply line, a transient suppressor connected between said other terminal of the device and said other supply line, said first switch means being closable to connect the inductor across the supply lines thereby to cause current flow through the inductor, said second switch means when said first switch means is opened, being closable to connect the device in a series circuit including said inductor whereby the energy sorted in said inductor is utilized to initiate current flow to said device.

4,449,163

AC CAPACITOR AND IMPREGNANT THEREFOR

Andrew E. Dequasie, Powaal, Vt., and Sidney D. Ross, Williamstown, Mass., assignors to Sprague Electric Company, North Adams, Mass.

Filed Feb. 28, 1983, Ser. No. 470,420

Int. Cl.³ H01G *4/22*

U.S. Cl. 361—315 **6 Claims**

1. An AC metallized film capacitor comprising a contiguously wound metallized film impregnated with a silicone dielectric fluid containing 2 to 10% of α-naphthyl isocyanate to improve capacitance retention.

4,449,164

ELECTRONIC MODULE COOLING SYSTEM USING PARALLEL AIR STREAMS

Douglas M. Carlson, Anoka, Minn.; Randall L. Ohman, San Antonio, Tex., and Lloyd M. Thorndyke, Edina, Minn., assignors to Control Data Corporation, Minneapolis, Minn.

Filed Sep. 27, 1982, Ser. No. 424,824

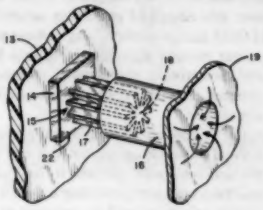
Int. Cl.³ H05K *7/20*

U.S. Cl. 361—384 **9 Claims**

1. In an assembly comprising a base, a circuit board mounted thereon, and a plurality of heat-generating electronic modules mounted on a side of the circuit board, an improved means for cooling the modules, comprising

(a) a plurality of heat conductive heat sinks each comprising a plurality of fins projecting from the circuit board, each heat sink attached in intimate thermal contact at one end to an electronic module;

(b) an air plenum mounted on the base having an air guiding side in facing, spaced apart relation with the side of the



circuit board on which the heat sinks are mounted, said air guiding side including a plurality of tube sections communicating with the plenum's interior, each extending toward and partially enclosing a heat sink, the exterior of each tube section being substantially sealed to the air guiding side; and

(c) means for creating an air pressure in the plenum different from the ambient.

4,449,165

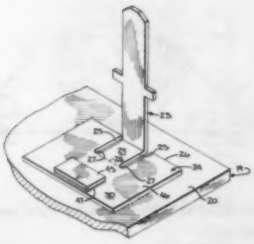
COMPACT CIRCUIT PACKAGE HAVING AN IMPROVED LEAD FRAME CONNECTOR

Lance R. Kaufman, 131 White Oak Way, Mequon, Wis. 53092

Filed Mar. 1, 1982, Ser. No. 353,177

Int. Cl.³ H05K *7/20*

U.S. Cl. 361—386 **7 Claims**



7. A compact circuit package, comprising

an electrically insulating housing having a cavity formed by a base wall surrounded by a peripheral wall terminating at a rim to form a circuit receiving receptacle and including an aperture within said base wall to provide external electrical access to said cavity,

an electrically insulating heat conducting substrate connected to said housing adjacent to said rim and having a first side facing said cavity to substantially enclose said cavity,

a heat generating circuit located adjacent to said substrate first side and generating heat along said substrate first side in response to the selective conduction of current therethrough, and

a lead frame connector electrically connected to said heat generating circuit and extending through said base wall aperture and including

a substantially planar lead frame portion located adjacent to said substrate first side and including a pair of spaced

substantially parallel slots communicating with a side edge of said planar portion to define

a tab located between said slots and movable with respect to said substrate along a bend line located adjacent to an end of said slots and

a fixed section integrally joined to said tab through said bend line permanently affixed to said planar first side and

a lead frame extension integrally joined to said tab at said planar side edge and extending substantially normal to said fixed section along a longitudinal axis and including an outer portion located within said housing aperture and selectively electrically connected to provide external electrical connection to said heat generating circuit and

a pair of oppositely spaced lateral projections extending normal to said longitudinal axis and spaced from said tab and said outer portion to be located adjacent to said base wall and providing a pair of spaced ledges to engage said base wall in response to force along said longitudinal axis in a direction away from said tab

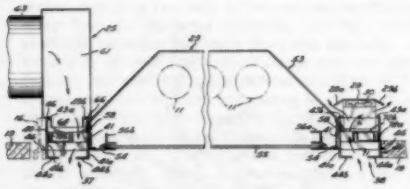
with said tab flexing along said bend line to permit limited movement of said lead frame extension along said longitudinal axis without disengaging said planar fixed section from said substrate.

4,449,166

LIGHTING FIXTURE AND AIR FLOW SUPPORT SYSTEM

Joseph F. Sharp, Norwalk, Calif., assignor to Ceiling Dynamics, Inc., Tucson, Ariz.

Filed Mar. 24, 1983, Ser. No. 478,501
Int. Cl.³ F21S *1/02*
U.S. Cl. 362—149 **35 Claims**



1. A suspended composite ceiling light and air ventilation fixture comprising:

a light-producing means,

a light-reflection unit surrounding and containing said light-producing means,

a multi-function support frame surrounding and operatively attached to the light-reflection unit,

said support frame including air inlet means adjacent to and extending along a lateral side portion of the light-reflection unit,

an air discharge means laterally adjacent to and extending along the light reflection unit at a location opposite that of said air inlet means,

false air duct means laterally adjacent the light-relection unit, and located between opposing ends of the air discharge and air inlet means,

means joining said false air duct means to ends of the air discharge and air inlet means and forming a portion of said support frame, and

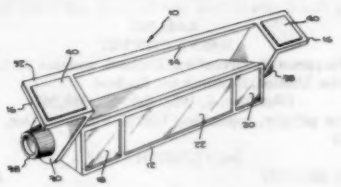
means for selectively positioning and attaching said support frame and combined components thereof to a suspended ceiling grid system.

4,449,167

ADJUSTABLE VEHICLE SAFETY LIGHT

Robert Cohen, 80-40 Lefferts Blvd., Kew Gardens, N.Y. 11415

Filed Jun. 6, 1983, Ser. No. 501,147
Int. Cl.³ F21V *21/26*
U.S. Cl. 362—269 **3 Claims**



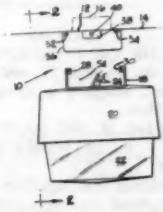
1. An auxiliary safety rear light assembly for vehicles comprising a lightable area which will illuminate in response to and signal vehicle action, pivot means on either end of the lightable area to pivot the lightable area on its horizontal axis, a mounting bracket having two dependent sides and a foot perpendicular to each of such sides, each side having means to accept a lightable area pivot means and locking means to lock the pivot means and hold the lightable area in a any desired position relative to such sides, and each foot having adhesive means on a surface thereof to fixedly attach the auxiliary safety rear light assembly to the vehicle.

4,449,168

QUICK INSTALL DEVICE FOR MOUNTING A LUMINAIRE

Robert L. Ewing, Newark, Ohio, assignor to Manville Service Corporation, Denver, Colo.

Filed Oct. 16, 1981, Ser. No. 311,833
Int. Cl.³ F21S *1/04*
U.S. Cl. 362—404 **6 Claims**



1. A light fixture assembly for mounting a luminaire on a flat surface such as a ceiling, a wall or the like, comprising:

(a) a mounting plate for fixedly attaching to the flat surface:

(b) a luminaire plate for fixedly attaching to the luminaire;

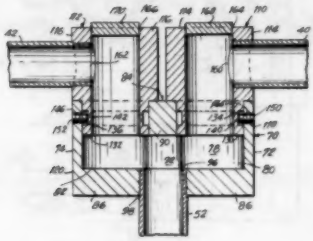
(c) a pair of horizontally longitudinally elongated holding legs fixedly attached to one of the plates and horizontally longitudinally elongated mating holding slots fixedly attached to the other plate for horizontally slidably engaging the plates together and attaching means for fixing one plate to the other plate; and

(d) a splice chamber for containing electrical splices used for the luminaire formed between the attached plates.

4,449,169
VERTICAL SWING BRACKET

Jerome Warshawsky, 3284 Bertha Dr., Baldwin Harbor, N.Y. 11510

Filed Oct. 15, 1982, Ser. No. 434,611
Int. Cl.³ F21S 1/12
U.S. Cl. 362—413 17 Claims



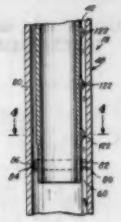
1. A swing arm assembly for a lamp; comprising:
(a) swing arm means for supporting a light source;
(b) at least one swing unit means connected to said swing arm means and including a swing unit mounting portion substantially cylindrical in external configuration;
(c) vertical swing bracket means coacting with said swing arm means to mount same for rotation about a predetermined vertical axis of rotation;
(d) said vertical swing bracket means including at least one swing unit mounting seat sized and arranged to receive said swing unit mounting portion and to facilitate rotation of said swing unit means about said predetermined axis of rotation;
(e) said mounting portion of said swing unit means further including a circular groove formed in its external cylindrical surface;
(f) said mounting seat including retention means selectively movable between a first position wherein a portion of said retention means extends into said circular groove of said swing unit means and prevents movement of said swing unit means along said predetermined axis of rotation while not hindering rotation thereof about said predetermined axis of rotation, and a second position removed from said circular groove to permit movement of said swing unit means in a direction along said predetermined axis of rotation;
(g) said vertical swing bracket means further including mounting means to facilitate mounting same, said swing unit means, said swing arm means and any light source supported thereby.

4,449,170
LAMP SUPPORT

Jerome Warshawsky, 3284 Bertha Dr., Baldwin Harbor, N.Y. 11510

Filed Oct. 15, 1982, Ser. No. 434,547
Int. Cl.³ F21S 1/12, 3/12
U.S. Cl. 362—413 6 Claims

1. A pharmacy type lamp; comprising:
(a) a lamp base;
(b) a lamp support carried by said lamp base;
(c) a light source disposed proximately a predetermined end of said lamp support;
(d) said lamp support including a first support member of predetermined tubular configuration, and a second support member also of predetermined tubular configuration and sized so that at least a portion of said second support member is received within said first support member so as to be able to be slid and rotated therewithin;
(e) and at least one external stop member carried by said second support member for coaction with a rib-like track on and within said first support member, said rib-like track being part of said first support member and being formed within and extending a predetermined amount into said first

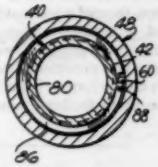


support member but external to said second support member, to permit rotation of said second support member almost through 360°.

4,449,171
LAMP SUPPORT FOR PHARMACY-TYPE LAMP

Jerome Warshawsky, 3284 Bertha Dr., Baldwin Harbor, N.Y. 11510

Filed Oct. 15, 1982, Ser. No. 434,613
Int. Cl.³ F21S 1/12
U.S. Cl. 362—413 7 Claims

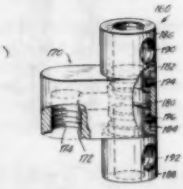


1. A lamp support for a pharmacy-type lamp which comprises:
(a) a lamp base;
(b) a lamp support carried by said lamp base;
(c) a light source disposed proximately at a predetermined end of said lamp support;
(d) said lamp support including a first support member of predetermined tubular configuration; and a second support member, also of predetermined tubular configuration, and sized so that at least a portion of said second support member is received within said first support member, so as to be able to be slid and rotated therewithin; and
(e) at least one stop member carried by said second support member, for coaction with a rib-like track formed within and extending a predetermined amount into said first support member, to permit rotation of said second support member almost through 360°, said rib-like track being formed within said first support member by infolding oppositely disposed edges of said first support member, and pressing said infolded edges in juxtaposition with each other, so that the infolded edges are contiguous with each other.

4,449,172
LAMP SWING UNITS

Jerome Warshawsky, 3284 Bertha Dr., Baldwin Harbor, N.Y. 11510

Filed Oct. 15, 1982, Ser. No. 434,545
Int. Cl.³ F21M 3/18
U.S. Cl. 362—427 21 Claims



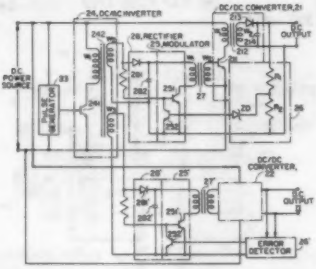
1. A swing arm assembly for a lamp; comprising:
(a) swing arm means for supporting a light source;
(b) swing unit means connected to said swing arm means and including a swing unit mounting portion substantially cylindrical in external configuration;
(c) support means coacting with said swing unit means to mount same for rotation about a predetermined axis of rotation;
(d) said support means including at least one swing unit mounting seat sized and arranged to receive said swing unit mounting portion and to facilitate rotation of said swing unit means about said predetermined axis of rotation;
(e) said mounting portion of said swing unit means further including a circular groove formed in its external cylindrical surface;
(f) said support means including retention means movable between a position wherein a portion of said retention means extends into said circular groove of said swing unit means and prevents movement of said swing unit means along said predetermined axis of rotation while not hindering rotation thereof about said predetermined axis of rotation, and a position removed from said circular groove to permit movement of said swing unit means in a direction along said predetermined axis of rotation;
(g) said support means further includng swing arm assembly mounting means to facilitate mounting said swing arm means.

4,449,173
MULTI-OUTPUT-TYPE POWER SUPPLY DEVICES USING SEPARATELY-EXCITING-TYPE SWITCHING REGULATORS

Hisao Nishino, and Shigeru Kondo, both of Sendai, Japan, assignors to Tohoku Metal Industries, Inc., Sendai, Japan

Filed Mar. 30, 1982, Ser. No. 363,484
Claims priority, application Japan, Mar. 31, 1981, 56-46337
Int. Cl.³ H02M 3/335; G05F 1/64
U.S. Cl. 363—21 3 Claims

1. In a stabilized DC power supply device having a plurality of switching regulators for generating a plurality of different DC powers with regulated voltage levels from a DC power source, the improvement which comprises:
a single pulse generator means to which DC power is fed from said DC power source for generating a pulse signal with a predetermined repetition frequency;
switching transistor means coupled to said single pulse generator means and being turned on and off by the output pulse from said single pulse generator means;
a pulse transformer having a primary winding and a plurality of secondary windings, said primary winding being coupled to said DC power source through said switching transistor means, said plurality of secondary windings being coupled respectively with said plurality of switching regulators whereby said plurality of switching regulators are excited in synchronization with one another by pulse signals from said single pulse generator means; and
a plurality of rectifier means coupled with said plurality of secondary windings, respectively, to rectify the output

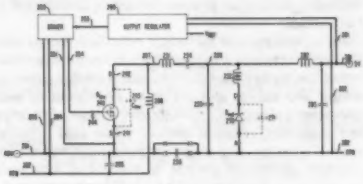


pulse signals on said respective secondary windings, each one of said plurality of rectifier means being coupled with a corresponding one of said plurality of switching regulators to provide a DC output thereto as its drive power source.

4,449,174
HIGH FREQUENCY DC-TO-DC CONVERTER

Norman G. Ziesse, Chester, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 30, 1982, Ser. No. 445,669
Int. Cl.³ H02M 3/335
U.S. Cl. 363—21 26 Claims



1. A DC-to-DC converter comprising
a power signal modulating device including adjunct circuit capacitance, a main power signal conduction path and a control terminal for accepting signals to control the main conduction path conductivity,
input means for coupling a source of power to the main power signal conduction path of the power signal modulating device,
output means for accepting a load to be energized and including a rectifying device including a main power signal conduction path and adjunct circuit capacitance,
an impedance matching and harmonic rejection network interconnecting the power signal modulating device and the rectifying device and operative to transfer energy therebetween at a substantially single preselected frequency, and
driving signal input means for accepting a substantially continuous periodic drive signal and coupled to the control terminal of the power signal modulating device, the periodic drive signal being operative to alternately bias the main power signal conduction path into conducting and nonconducting modes of operation, the periodic drive signal having a frequency identical to the preselected frequency and the preselected frequency being selected sufficiently high so that the adjunct circuit capacitance of the power signal modulating device and the rectifying

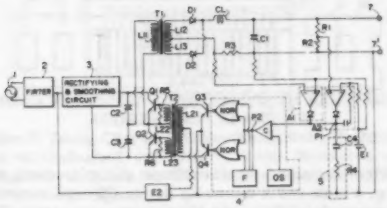
device are fully and positively utilized as integral components of the impedance matching and filtering network.

4,449,175

SWITCHING REGULATOR

Masanori Ishii, Kawagoe, and Hiroichi Ishikawa, Kawaguchi, both of Japan, assignors to Toko, Inc., Tokyo, Japan

Filed Apr. 23, 1982, Ser. No. 371,264
Claims priority, application Japan, Apr. 28, 1981, 56-64789
Int. Cl.³ H02M *3/335*
U.S. Cl. 363—26 **3 Claims**



1. A switching regulator of the type wherein a pair of transistors are alternately turned on and off by a base input applied thereto so that a current which is alternately reversed in direction is caused to flow through a primary winding of a main transformer; and a voltage induced in a secondary winding of the main transformer is rectified to obtain a DC output; and the pulse width of said base input is controlled in accordance with the magnitude of a detected output voltage by means of a pulse-width modulator to maintain the output voltage constant, characterized in that said pulse-width modulator is provided, by an error amplifier, with an input corresponding to the magnitude of said detected output voltage; and variations in the input applied to the pulse-width modulator for increasing the pulse width of said base input are moderated by means of a time-constant circuit and a circuit for causing said time-constant circuit to be charged and discharged.

4,449,176

SINGLE PHASE REGENERATION WITH A POLYPHASE RECTIFICATION POWER CIRCUIT

Fred G. Turnbull, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed May 26, 1982, Ser. No. 382,332
Int. Cl.³ H02P *13/24*
U.S. Cl. 363—81 **7 Claims**

1. A circuit for supplying rectified power to a load from a three phase ac source and providing single phase regeneration from the load to the three phase source, comprising:

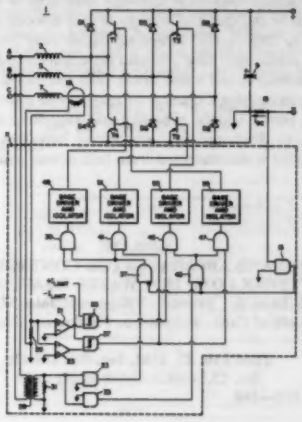
a three phase bridge rectifier including a plurality of rectifying elements, said rectifier adapted to be coupled to said three phase ac source;

controllable switch means with self-commutating ability coupled in inverse parallel with each of said rectifying elements respectively, in the first and second phases of said rectifier, said controllable switch means forming a single phase inverter;

first current sensing means for sensing current in the third phase of said rectifier;

second current sensing means for sensing the direction of current to the load; and

control means coupled to said switch means and said first and second current sensing means, said control means being responsive to direction and amplitude of current in the third phase of said rectifier for switching said switch means during regeneration, said control means including means for comparing relative voltages of said first and second phases of the ac source to determine conduction intervals of said switch means when providing regenerative current to the first and second phases of said source, and means coupled to said first current sensing means for



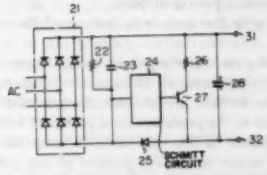
pulse width modulating said controllable switch means to maintain said third phase rectifier current within predetermined positive and negative current limits.

4,449,177

DISCHARGING CIRCUIT FOR POWER SOURCE DEVICE WITH RECTIFIER CIRCUIT

Yoshinori Kozai, Hino; Katsuo Kobari, Tachikawa, and Keiji Sakamoto, Hino, all of Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

PCT No. PCT/JP81/00142, 371 Date Feb. 22, 1982, 102(e) Date Feb. 22, 1982, PCT Pub. No. WO82/00070, PCT Pub. Date Jan. 7, 1982
PCT Filed Jun. 20, 1981, Ser. No. 354,099
Claims priority, application Japan, Jun. 20, 1980, 55-82800
Int. Cl.³ H02M *7/06*
U.S. Cl. 363—126 **4 Claims**



1. A direct-current power supply comprising:

a rectifier connectable to an alternating-current power source for providing a direct-current output;

a pair of load terminals connected to said rectifier;

a smoothing capacitor connected between said load terminals;

a switching circuit connected between said load terminals in parallel with said smoothing capacitor;

a time constant selection circuit connected across the output of said rectifier;

a diode connected between said rectifier and one of said load terminals to permit flow of current from said rectifier to said load terminals and to prevent flow of current from said smoothing capacitor to said time constant selection circuit; and

a Schmitt circuit having its input connected to said time constant selection circuit and its output connected to said

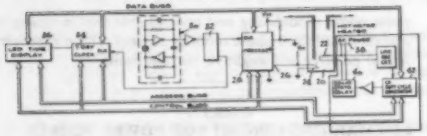
switching circuit and arranged to minimize said switching circuit in a non-conducting state when the rectified voltage across said time constant selection is substantially equal to the charged voltage of said smoothing capacitor and to turn on said switching circuit only when the voltage across said time constant selection circuit falls below a predetermined value lower than the charge voltage of said smoothing capacitor in response to disconnection of said power source, whereby said switching circuit operates to discharge said smoothing capacitor when said rectifier is disconnected from said power source.

4,449,178

METHOD AND APPARATUS FOR CONTROLLED OFF PEAK LOAD HOT WATER HEATING

Frederick Blau, Jr., Fountain Valley, and John M. Gross, San Jose, both of Calif., assignors to Fluidmaster, Inc., Anaheim, Calif.

Filed Feb. 27, 1981, Ser. No. 239,170
Int. Cl.³ G05D *23/19*; F24H *1/20*
U.S. Cl. 364—148 **14 Claims**



11. A method of heating water over a period of time comprising the steps of:

(1) determing the temperature of water in a water heater;

(2) computing and setting the heating means of the heater for that being required to raise the temperature of the water over a predetermined segment of the predetermined period of time an amount that is related to the total desired termperature increase over the entire predetermined period of time;

(3) waiting until the end of the predetermined segment of the predetermined period of time;

(4) determining the new temperature of the water in the heater;

(5) computing and resetting the heating means of the heater for that being required to raise the temperature of the water over another predetermined segment of the remaining portion of the predetermined period of time an amount that is related to the total desired temperature increase over the entire remaining portion of the predetermined period of time.

13. A device for controlling a hot water heater to heat water to a desired temperature by the end of a predetermined time period comprising:

means for keeping time;

temperature sensing means communicating with the water in said hot water heater for determining the temperature of the water;

adjustable heating means operationally connected to said hot water heater for heating water in said hot water heater;

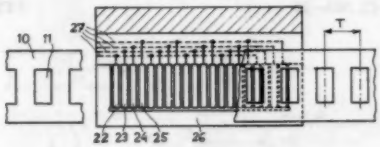
processing means operationally connected to said temperature sensing means, said time means, and said adjustable heating means for repeatedly determining the number of time segments remaining until the end of the time period, computing heating means necessary to raise the temperature of the water over the next segment of the time period an amount that is related to the total desired increase in temperature for the entire time period, and for setting said adjustable heating means to the computed proportion.

4,449,179

MEANS FOR CAPACITIVE MEASUREMENT OF DISPLACEMENTS

Hans U. Meyer, Rue des Taneurs 3, 1110 Morges, Switzerland

Filed May 26, 1981, Ser. No. 267,040
Claims priority, application Fed. Rep. of Germany, May 27, 1980, 3020411
Int. Cl.³ G01R *27/26*
U.S. Cl. 324—61 R **5 Claims**



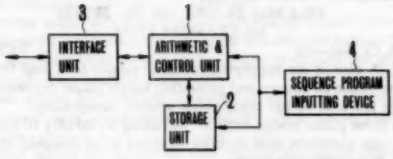
1. Means for capacitive measurement of displacements comprising, a scale and a measuring device (**20**) said measuring device provided with a series of transmitting electrodes (**22** to **25**) and at least one receiving electrode (**29**), characterized by the fact that said scale comprises an electrically conductive belt (**10**) having a plurality of regularly spaced openings (**11**), the distance (T) between the center axis of adjacent openings covering at least three transmitting electrodes said belt (**10**) passing through the measuring device (**20**) in such a way that the openings (**11**) comprise, together with said electrodes (**22** to **25** and **29**), a differential condenser formed by a plurality of elementary condensers, the capacity of which varies in function of the position of said belt (**10**) with respect to the measruing device (**20**).

4,449,180

SEQUENCE PROGRAM INPUTTING DEVICE

Yoshimitsu Ohshima, Tokyo; Norio Yokozawa, Fuchu, and Masayoshi Ohzeki, Chiba, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 138,654, Apr. 9, 1980, abandoned. This application May 4, 1982, Ser. No. 374,870
Claims priority, application Japan, Apr. 11, 1979, 54-43065
Int. Cl.³ G06F *15/46, 9/00*
U.S. Cl. 364—147 **8 Claims**



1. A sequence program inputting device for providing a machine instruction sequence for executing controls defined by a ladder diagram to a sequence controller which provides control output signals in response to said machine instruction sequence, wherein said ladder diagram comprises a plurality of device symbols, line symbols for connecting said device symbols and reference symbols for indicating references of said device symbols, comprising:

first means for individually manually specifying said device symbols, said line symbols and said reference symbols;

second means for displaying patterns including a refresh memory which stores pattern codes for specifying patterns to be displayed at respective display positions;

third means for generating pattern codes for displaying said specified symbols and for storing said generated pattern codes in said refresh memory at storing positions thereof

corresponding to display positions of said specified symbols, thereby allowing said second means to display said ladder diagram, wheren said third means further includes means for generating said machine instruction sequence by decoding said pattern codes stored in said refresh memory after said ladder diagram is displayed by said second means.

4,449,181

DATA PROCESSING SYSTEMS WITH EXPANDED ADDRESSING CAPABILITY

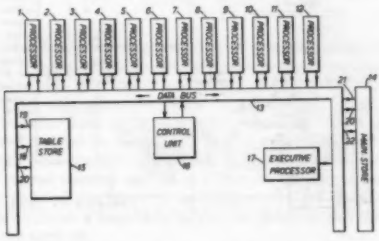
Arthur P. Young; Clive D. P. Gildersleeves; Brian W. Partridge, all of Chelmsford, and Keith L. Ryder, Brentwood, all of England, assignors to The Marconi Company Limited, Chelmsford, England

Continuation of Ser. No. 952,967, Oct. 20, 1978. This application Oct. 2, 1980, Ser. No. 193,080

Claims priority, application United Kingdom, Oct. 21, 1977, 43908/77

Int. Cl.³ G06F *1/00, 9/20*

U.S. Cl. 364—200 **1 Claim**



1. A data processing system for expanding the address capability of individual microprocessors sharing a common store, which comprises:

a plurality of processors each capable of internally generating a digital addressing word of A+B digits;

a main store common to all of said processors and having a plurality of storage regions each containing a plurality of storage areas, each storage area being addressable by a digital addressing word of Z+B digits where Z is greater than A;

a table store separate from said main store and common to all of said processors, said table store comprising a plurality of tables each providing a plurality of digital codewords of Z digits;

a shared data-bus connecting all of said microprocessors, said main store and said table store;

a control unit connected to said data-bus to control the data-bus for access by a selected processor to the table store and the main store and to address a particular table of said table store in accord with the selected processor, to pass the A digits of the addressing word of the selected processor to said particular table and thereby address a particular codeword of said particular table, and to pass the Z digits of said particular codeword, together with the B digits of said addressing word of the selected processor to address a particular storage area of said main store whereby to expand the address capability of the selected processor by the value $2^{(Z+B)}-2^{(A+B)}$.

4,449,182

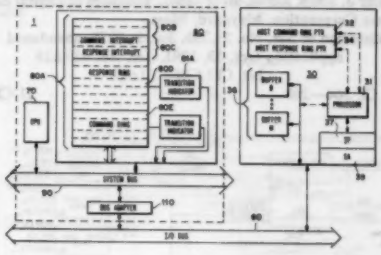
INTERFACE BETWEEN A PAIR OF PROCESSORS, SUCH AS HOST AND PERIPHERAL-CONTROLLING PROCESSORS IN DATA PROCESSING SYSTEMS

Barry L. Rubinson; Edward A. Gardner; William A. Grace; Richard F. Lary, and Dale R. Keck, all of Colorado Springs, Colo., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Oct. 5, 1981, Ser. No. 308,826

Int. Cl.³ G06F *9/46, 15/16*

U.S. Cl. 364—200 **21 Claims**



1. In a data processing system which includes first and second processors (70 and 31), a memory (80) to which information can be written by each of said processors and from which information can be read by each of said processors, such memory having a plurality of locations for storing said information, and bus means (60) for interconnecting the first and second processors and said memory, to enable communications therebetween, said bus means being of the type which has no hardware interlock capability which is usable by the other of said processors to selectively prevent the other of said processors from accessing said memory locations, the improvement comprising:

communications control means for controlling communications between said processors and permitting the first processor to send a plurality of commands in sequence to the second processor via the bus means, and for permitting the second processor to send responses to those commands to the first processor via the bus means;

the communications control means including a plurality of locations in said memory, termed interface memory locations, adapted to serve as a communications interface between the first and second processors, all commands and responses being transmitted through such interface memory locations;

the interface memory locations comprising a pair of ring buffers;

a first one of said ring buffers being adapted to buffer the transmission of messages issued by the first processor and a second one of said ring buffers being adapted to buffer the reception of messages transmitted by the second processor;

each of said ring buffers including a plurality of memory locations adapted to receive from an associated one of said processors a descriptor signifying another location in said memory;

for said first ring buffer, the location signified by such descriptor being a location containing a message for transmission to the second processor;

for said second ring buffer, the location signified by such descriptor being a location for holding a message from the second processor; and

the communications control means permitting each of said processors to operate at its own rate, independent of the other of said processors, and to access a ring buffer for writing thereto only when the buffer does not contain information previously written to such buffer but not yet

read from it and for reading to such buffer only when the buffer contains information written to it but not yet read therefrom, thus preventing race conditions from developing across said bus means in relation to accessing the interface memory locations.

4,449,183

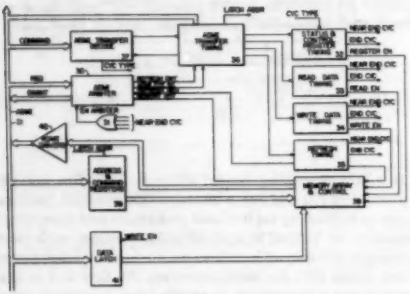
ARBITRATION SCHEME FOR A MULTIPORTED SHARED FUNCTIONAL DEVICE FOR USE IN MULTIPROCESSING SYSTEMS

Barry J. Flahive, Westford; John J. Grady, III, Woburn, and Peter J. Rado, Acton, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 55,769, Jul. 9, 1979, abandoned. This application Oct. 13, 1981, Ser. No. 310,825

Int. Cl.³ G06F *13/00*

U.S. Cl. 364—200 **11 Claims**



1. In a memory means for use in a data-processing system that includes plural requesting devices adapted to be enabled by receipt of grant signals, each requesting device generating request signals associated therewith and transmitting its associated request signals to said memory means, said memory means including storage locations, connection means for transferring information between said requesting devices and said storage locations, and memory-cycle control means operable by application of a start signal thereto to begin performance of a memory operation in which information is transferred over said connection means between said storage locations and an enabled requesting device and for subsequently generating an enabling signal to indicate that an arbitration operation can be commenced, an arbitration network comprising:

A. priority-determination means, connected to receive said request signals from said requesting devices, for determining priority and generating a grant signal associated with a requesting device determined according to a predetermined priority rule, priority determination by said priority-determination means commencing with said enabling signal if a request signal has been sent by a requesting device;

B. sole-request-detection means, connected to receive said request signals from said requesting devices, for transmitting a start signal to said memory-cycle control means in response to a sole-request condition before said priority-determination means has determined priority; and

C. arbitration-control means connected to receive said request signals from said requesting devices and said grant signals from said priority-determination means, said arbitration-control means being initiated by said enabling signal, if a requesting device generates a request signal, to forward as grant signals, if said sole-request-detection means detects a sole-request condition, request signals received from said requesting devices, and, if said sole-request-detection means has not detected a sole-request condition, to forward the grant signal from said priority-determination means to the requesting device associated with that grant signal and transmit a start signal to said memory-cycle control means after said priority-determination means has determined priority, a memory cycle thereby being started before priority determination has been finished if only one requesting device requests access to the memory.

4,449,184

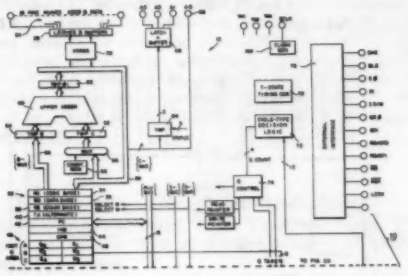
EXTENDED ADDRESS, SINGLE AND MULTIPLE BIT MICROPROCESSOR

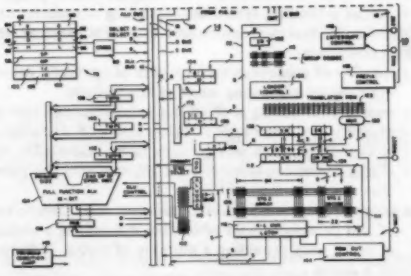
William Pohlman, III, Los Gatos; Bruce W. Ravenel, III, Sunnyvale; James F. McKevitt, III, San Jose, and Stephen P. Morse, San Francisco, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Division of Ser. No. 873,777, Jan. 31, 1984, Pat. No. 4,363,091. This application Nov. 18, 1981, Ser. No. 322,471

Int. Cl.³ G06F *9/38*

U.S. Cl. 364—200 **8 Claims**





1. In a microprocessor chip, a data processing system for use with a memory external to the chip comprising;

upper control means for transferring digital information to and from said memory; and

lower control means for processing said digital information wherein the operation of said upper and lower control means are overlapping and asynchronous;

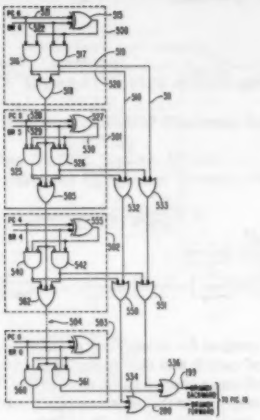
wherein said upper control means includes a file of registers, and wherein said file includes a plurality of registers forming an ordered, first-in-first-out queue of registers, and digital information in the nature of instructions obtained from said memory are temporarily stored in said queue until requested by said lower control means for execution.

4,449,185

IMPLEMENTATION OF INSTRUCTION FOR A BRANCH WHICH CAN CROSS ONE PAGE BOUNDARY

Joel R. Oberman, Somerville, and Russell G. Ott, Cranford, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 30, 1981, Ser. No. 326,162
Int. Cl.³ G06F *9/32*
U.S. Cl. 364—200 **3 Claims**



1. In a data processing system employing a program counter (PC), and a memory divided into pages each containing 2^N memory locations, and in which each of the memory location addresses comprises two bytes, an upper order byte, and a lower order byte, with each byte comprising N bits, an improved method for executing a branch instruction directing a branch from one memory address in one page of the memory to a second memory address in a location not beyond an adjacent page of the memory, but independent of whether the branch crosses a page boundary in the memory, and comprising the steps of:

determining if the binary value V1 represented by the (N-1) least significant bits (LSB's) of the lower order byte of the branch address is greater than the binary value V2 represented by the (N-1) LSB's of the lower order byte of the address to which the PC is pointing (the PC address);

determining if PC N≠BR N where PC N is the most significant bit of the lower order byte of the PC address and BR N is the most significant bit of the lower order byte of the branch address;

incrementing by 1 the upper order byte of the PC address if V1<V2, PC N=1, and PC N≠BR N;

decrementing by 1 the upper order byte of the PC address if V1>V2, PC N=0, and PC N≠BR N; and

replacing the lower order byte of the PC address with the lower order byte of the branch address.

4,449,186

TOUCH PANEL PASSENGER SELF-TICKETING SYSTEM

Guy M. Kelly, La Jolla; John B. Roes, San Diego; Samuel B. Walker, Coronado, and Bruce A. Beach, San Diego, all of Calif., assignors to Cubic Western Data, San Diego, Calif.

Filed Oct. 15, 1981, Ser. No. 311,906
Int. Cl.³ G07F *7/08*
U.S. Cl. 364—407 **5 Claims**

1. A passenger self-ticketing system for vending tickets based upon reservation data stored in a central host computer, the system being comprised of a plurality of ticket terminals which communicate with the host computer, each of the terminals including:

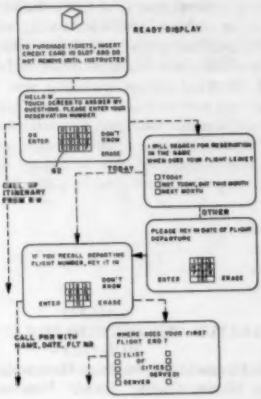
credit card reader means for reading data from a credit card inserted therein by a passenger;

video means including a CRT for displaying alphanumeric and graphic information including inquiries and visual response targets to the passenger;

touch input means for enabling the passenger to respond to inquiries displayed by the video means by placing a finger on a respectively corresponding visual response target displayed on the CRT;

printer means for generating and dispensing a ticket based upon the reservation data;

interface means for communicating with the host computer; and



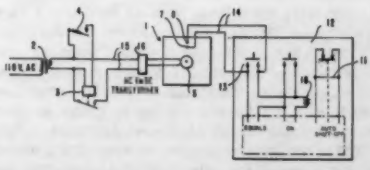
local computer means for receiving data from the credit card reader means, causing the video means to display a sequence of inquiries and visual response targets regarding any reservation data of the passenger, which may have already been stored in the central host computer, receiving passenger responses from the touch input means, and interrogating the host computer via the interface means to determine the passenger's reservation data stored in the central host computer, if any, and further for causing the video means to display the determined reservation data and a confirm inquiry to the passenger, receiving a confirmation response from the touch input means, causing the printer means to generate and dispense a ticket base upon the passenger's reservation data, and sending a transaction report to the host computer via the interface means.

4,449,187

DEVICE FOR INDIRECTLY MONITORING CUMULATIVE COST OF UTILITY CONSUMPTION

Charles F. Scott, 441 Beach St., Middleport, Ohio 45706

Filed Jul. 30, 1982, Ser. No. 403,721
Int. Cl.³ G06F *15/20*
U.S. Cl. 364—464 **1 Claim**



1. In conjunction with a utility consumption apparatus having an ON/OFF switch controlling the consumption of the utility, a device for indirectly monitoring and displaying the

cumulative cost of the utility consumed by said apparatus without physically measuring the utility consumed by said apparatus, comprising:

an electrical clock having a face, a minute hand, an electrical contact brush located on said minute hand, an electric motor for moving said minute hand, and electrical contact surfaces on said face for forming a calculation triggering switch with said electrical contact brush;

an AC to DC transformer for connecting said electric motor and said ON/OFF switch for advancing said minute hand only when said utility consumption apparatus is operating to consume the utility to be monitored;

constant addend calculation means having a memory for storing a cumulative total and a constant monetary increment, an addition circuit for adding said constant monetary increment to said cumulative total, an equals switch for activating said addition circuit, and display means; and

a first electrical circuit including said electrical contact brush and said electrical contact surfaces for short circuiting said equals switch and activating said addition circuit to calculate the sum of said constant monetary increment and said cumulative total, to display said sum and to replace said cumulative total in said memory with said sum.

4,449,188

APPARATUS AND METHOD FOR CONTROLLING HUMIDITY

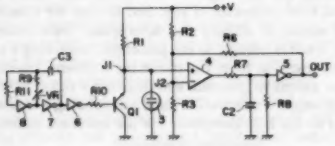
Takehiko Unoguchi, Kyoto; Seiro Hasegawa, Ikeda; Katsuyuki Fujito, Higashi-Osaka; Atsushi Nishino, Neyagawa, and Akihiko Yoshida, Taishi-bashi, all of Japan, assignors to Matsushita Electrical Industrial Co., Tokyo, Japan

Continuation of Ser. No. 128,877, Mar. 10, 1980, abandoned. This application Nov. 5, 1981, Ser. No. 318,552

Claims priority, application Japan, Mar. 12, 1979, 54-29151

Int. Cl.³ G06G *7/66*; G05D *22/02*

U.S. Cl. 364—505 **18 Claims**



17. A method of controlling humidity, comprising the steps of sensing ambient relative humidity by exposing to an environment to be humidity controlled a humidity sensing element, an electrostatic capacitance of which varies in accordance with ambient relative humidity, charging by a DC voltage the electrostatic capacitance of the humidity sensing element in accordance with a pulse train signal, the width and duty cycle of said pulse train signal being selected such that a varying voltage across the humidity sensing element derived from the DC source rises to a predetermined voltage when the electrostatic capacitance of the humidity sensing element assumes a given value, comparing the voltage across the humidity sensing element with a reference voltage to detect an interval required for charging the humidity sensing element so that the voltage across the humidity sensing element equals the reference voltage, changing the pulse width of the pulse train signal for setting a reference humidity and applying the signal developed by the humidity sensing circuit to a humidity control means.

4,449,189

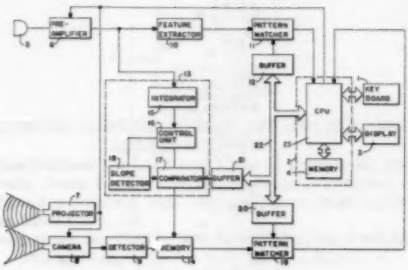
PERSONAL ACCESS CONTROL SYSTEM USING SPEECH AND FACE RECOGNITION

Wolfgang H. Feix, Mt. Laurel, N.J., and Hartwig E. Ruell, Fuerstenfeldbruck, Fed. Rep. of Germany, assignors to Siemens Corporation, Iselin, N.J.

Filed Nov. 20, 1981, Ser. No. 323,657

Int. Cl.³ G10L *1/00*

U.S. Cl. 364—513.5 **13 Claims**



1. A method for identifying an individual through a combination of speech and face recognition which comprises:

(a) defining a characteristic sequence of features of the voice in response to the utterance of a predetermined key word by the individual to be identified;

(b) forming a momentary image of a voice-utterance varying portion of the individual's face upon the occurrence of a key event in the utterance of the key word; and

(c) using both the defined sequence of features and the momentary image in order to determine the identity or non-identity of the individual.

4,449,190

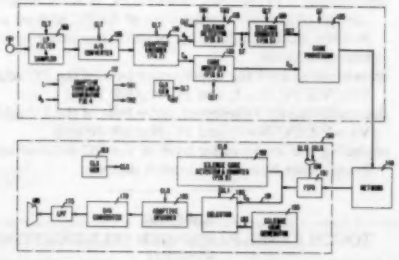
SILENCE EDITING SPEECH PROCESSOR

James L. Flanagan, Warren, and James D. Johnston, Millington, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 27, 1982, Ser. No. 343,238

Int. Cl.³ G10L *1/00*

U.S. Cl. 364—513.5 **15 Claims**



1. A speech processing system comprising: means for converting a speech pattern into a sequence of adaptive digital coded signals; means for detecting intervals of silence in said speech pattern; means responsive to each detected silence interval for generating a digital coded signal representative thereof; and means for combining said adaptive digital coded signals and said silence interval representative digital coded signals to form a digital signal corresponding to said pattern; said converting means comprising: means for forming a signal corresponding to the adaptation step-size for each adaptive

digital coded signal; means for generating first and second threshold signals, said second threshold signal being greater than said first threshold signal; said silence interval detecting means comprising: means responsive to said adaptation step-size corresponding signal diminishing below said first threshold signal for generating a signal indicative of a silence interval; and means jointly responsive to said silence interval signal and said adaptation step-size corresponding signal increasing above said second threshold signal for terminating said silence interval signal.

4,449,191

PROCESS AND AN APPARATUS FOR MEASURING AN ANGLE

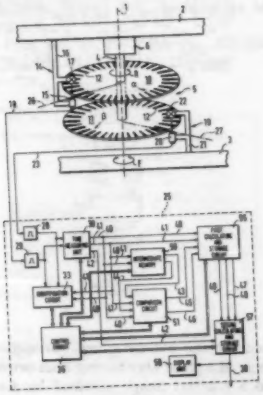
Walter Mehnert, Grillparzerstr. 6, D-8012 Ottobrunn, Fed. Rep. of Germany

Filed Apr. 21, 1981, Ser. No. 256,031

Claims priority, application Fed. Rep. of Germany, May 14, 1980, 3018496

Int. Cl.³ G06F *15/20*; G01B *7/30*

U.S. Cl. 364—559 **46 Claims**



28. Apparatus for measuring the angle which two members enclose with respect to an axis of rotation about which they are rotatable with respect to each other, comprising a rotating mark carrier having marks disposed thereon at a certain distance apart in the direction of rotation, said mark carrier being attached to one of the two members so as to rotate about their mutual axis and of being driven by a drive means for rotating said mark carrier continuously independent of the rotation movement of the two members, a pair of sensors, one of said sensors being attached to the same member as the mark carrier and the other being attached to the other member, said sensors emitting a signal corresponding to each of said marks, and a measuring and evaluating circuit comprising an identification circuit which identifies the marks belonging to the signals emitted by the sensors, a time measuring unit which measures the time distances of the signals emitted by the sensors and a calculation and storage circuit which, after receiving a corresponding command signal, calculates and stores the angular distances, with respect to a zero point of the angular measurement, between the marks from the time distance values for signals assigned to identified marks and coming from the various sensors, from stored calibrating values for the absolute angular distances of identified marks, and from the instantaneous angular velocity of the mark carrier and which, upon subsequent rotations of the mark carrier, calculates the instantaneous angle between the two members from the time distance values for signals assigned to identified marks and coming from the various sensors, and from the stored angular distances of these marks, said angular distances being with respect to the zero point of the angular measurement, and from the instantaneous angular velocity of the mark carrier.

4,449,192

RADIO WAVE ANGLE OF INCIDENCE MEASUREMENT APPARATUS

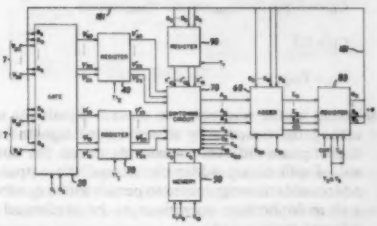
Masaru Watanabe; Nobuharu Yamauchi; Naoki Hashimoto, and Tetsuo Tamama, all of c/o Communications Equip. Works of Mitsubishi Denki K.K. No. 80, Nakano, Minami Shimizu, Amagasaki City, Hyogo Prefecture, Japan

Continuation-in-part of Ser. No. 24,667, Mar. 28, 1979, abandoned, which is a continuation of Ser. No. 476,157, Jun. 3, 1974, abandoned, which is a continuation-in-part of Ser. No. 859,911, Sep. 22, 1969, abandoned. This application Dec. 9, 1981, Ser. No. 329,030

Claims priority, application Japan, Sep. 5, 1968, 43-63942

Int. Cl.³ G06F *15/20*; G01S *3/46, 3/48*

U.S. Cl. 364—559 **8 Claims**



1. In a radio angle measurement apparatus the combination comprising:

(a) an antenna array comprising a plurality of radiator elements spaced with an inter-element spacing d which is considerably larger than one-half of the propagation wavelength λ of a radio-frequency electromagnetic signal incident on said antenna array, said antenna array exhibiting at least two different values of d/λ, said antenna array responding to the incident radio-frequency electromagnetic signal by developing respective electrical signals at said radiator elements, and the electrical signals developed at said respective radiator elements having mutually different relative phase values therebetween each of which varies as the incident angle of the received radio-frequency signal varies;

(b) digital phase difference measuring means for measuring the phase differences between the electrical signals developed by said radiator elements for at least two different values of d/λ and for developing digital output signals representative of the measured values of phase difference; and

(c) phase difference to incident angle converter means responsive to the digital output signals from said digital phase difference measuring means for generating an output signal representative of the incident angle of the radio-frequency electromagnetic signal relative to said antenna array and which varies monotonically as the incident angle varies, said phase difference to incident angle converter means comprising

a binary adder circuit responsive to control signals for performing addition, subtraction and multiplication operations on binary signals applied to said binary adder circuit and for developing a binary output signal having a binary value equal to the result of the operation performed by said binary adder circuit;

storage means responsive to control signals for temporarily storing in binary signal format the output signals from said digital phase difference measuring means and for temporarily storing in binary signal format the binary output signals from said binary adder circuit;

addressable memory means responsive to control signals for

storing and for reading out the following numerical constants in binary signal format,

$C_1=A\sin(\alpha+\beta)/\sin\beta$

$C_2=A\cos(\alpha+\beta)/\sin\beta$

$C_3=A\Psi_{1max}\sin(\alpha+\beta)/\sin\beta$

$C_4=A\Psi_{1max}\cos(\alpha+\beta)/\sin\beta$

$C_5=B\sin\alpha/\sin\beta$

$C_6=B\cos\alpha/\sin\beta$

$C_7=B\Psi_{1max}\sin\alpha/\sin\beta$

$C_8=B\Psi_{2max}\cos\alpha/\sin\beta$

$C_9=(A/\sin\beta)(\Psi_{1max}\sin(\alpha+\beta)+\Psi_{2max}\cos(\alpha+\beta))$

$C_{10}=(B/\sin\beta)(\Psi_{1max}\sin\alpha+\Psi_{2max}\cos\alpha)$

$C_{11}=0.5$

$C_{12}=Y_{step}$

selecting means responsive to control signals for selecting among the temporarily stored output signals from said digital phase difference measuring means, the output signal of said binary adder circuit and the output of said addressable memory means to permit addition, subtraction and multiplication operations to be performed on the selected signals; and

control means for applying control signals to said storage means, said binary adder circuit, said selection means and said addressable memory circuit to operate said selection means and to operate said binary adder circuit to perform addition, subtraction and multiplication operations on the selected signals according to the following equations:

(i) transforming the digital output signals of said digital phase difference measuring means having values Ψ_1, Ψ_2 into signals having values X_1, Y_1 and temporarily storing the signals having values X_1, Y_1 in said storage means, wherein

$X_1=C_1\Psi_1-C_2\Psi_2$

$Y_1=-C_5\Psi_1+C_6\Psi_2$

(ii) if $Y_1\geq 0$, performing the signal processing of (vi),

(iii) if $Y_1<0$, transforming the signals having values X_1, Y_1 into signals having values X, Y and temporarily storing the signals having values X, Y in said storage means, wherein

$X=X_1-C_3$

$Y=Y_1+C_7$

(iv) if $X_1<C_3$ and $Y_1\geq -C_8$, transforming the signals having values X_1, Y_1 into signals having values X, Y and temporarily storing the signals having values X, Y in said storage means, wherein

$X=X_1-C_4$

$Y=Y_1+C_8$

(v) if $Y_1<C_8$, transforming the signals having values X_1, Y_1 into signals having values X, Y and temporarily storing the signals having values X, Y in said storage means, wherein

$X=X_1-C_9$

$Y=Y_1+C_{10}$

(vi) subtracting [Y] Ystep from Y, wherein [Y] is the integer value of Y, and if $Y-[Y]Ystep\geq 0.5$ Ystep setting $Y=[Y]+1$, and if $Y-[Y]Ystep<0.5$ Ystep setting $Y=[Y]$; and

(vii) adding Y+X.

4,449,193

BIDIMENSIONAL CORRELATION DEVICE

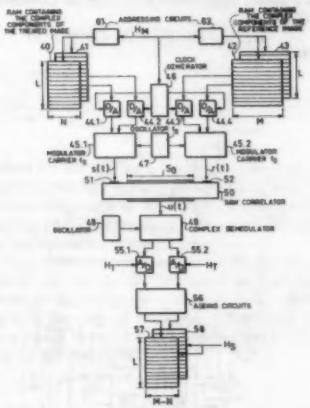
Pierre Tournois, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Apr. 23, 1981, Ser. No. 256,929

Claims priority, application France, Apr. 25, 1980, 80 09386

Int. Cl.³ G06F *15/336*; G06G *7/195*

U.S. Cl. 364—604 **6 Claims**



1. A device for the bidimensional correlation between a reference image of a plane Oxy having lines oriented in the Ox direction and a scanned image obtained by scanning in the plane Oxy, the scanned lines being parallel to Ox, wherein said device comprises:

a correlation means including a surface wave convolver said correlation means connected to receive first signals corresponding to said reference image and second signals corresponding to said scanned image with said reference image being formed from K lines of M points and said scanned image being formed from L lines of N points, in which $L>K$ and $N<M$, wherein the K lines of the reference image are correlated line-by-line with all the systems of K lines such as i at $i+k-1$ of the scanned image in which 1 is less than or equal to i less than or equal to L minus K, whereby one line of the reference image is simultaneously inputted with one line of the scanned image in order to supply to said correlation means an electrical representation of a monodimensional correlation line formed from points corresponding to the displacement of said reference image and said scanned image thus supplying after summation for a same displacement α along Ox, (L-K) correlation lines of (M-N) points, wherein said first signals corresponding to the reference image are stored in a first pair of random access memories and said second signals corresponding to the scanned image are each stored in a second pair of random access memories which are read under the control of a clock with one of said first and second signals being read along Ox and the other of said first and second signals being read in the opposite direction along Ox;

digital to analog converter means connected to said random

access memories for receiving the output of said random access memories;

modulation means for receiving the output of said digital-to-analog converter means and supplying a modulated signal placed on a frequency carrier f_O to said correlation means;

demodulation means for demodulating the output of said correlation means and applying said demodulated signal to an analog-digital converter;

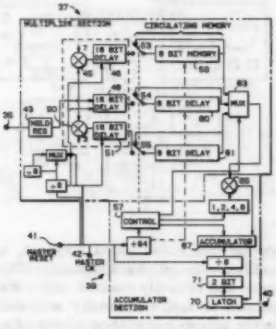
adder means which adds the output of said analog to digital converter and which thereby adds the signals for the points corresponding to one and the same displacement for said (M-N) monodimensional correlation lines of said reference image and said scanned image with the output of said adder means supplying a bidimensional correlation signal whereby said device for bidimensional correlation supplies a new bidimensional correlation line after each new scanned line of the image obtained by scanning.

4,449,194

MULTIPLE POINT, DISCRETE COSINE PROCESSOR

Randy L. Wilhelm, Mesa, Ariz., assignor to Motorola Inc., Schaumburg, Ill.

Filed Sep. 25, 1981, Ser. No. 305,584
Int. Cl.³ G06F *15/332, 7/52*
U.S. Cl. 364—725 11 Claims



1. A multiple point, discrete cosine processor for digital signals comprising:

(a) a premultiplier connected to receive the digital signals and to multiply each of the signals by a plurality of fixed, different factors, said premultiplier having an output for each of the different factors;

(b) signal selection circuitry connected to the outputs of said premultiplier and having a single output, said selection circuitry supplying premultiplied signals from the outputs of said premultiplier to the output of said selection circuitry in a predetermined order;

(c) a multiplier constructed to multiply each input signal by a selected one of a plurality of predetermined factors, said multiplier being connected to the output of said selection circuitry and providing the multiplied signals at an output;

(d) control circuitry connected to said selection circuitry and said multiplier and controlling the predetermined order of the premultiplied signals from said selection circuitry and the selection of the multiplying factors in said multiplier so the multiplied signals at the output of said multiplier represents the multiple points multiplied by an approximation of a discrete cosine transform matrix; and

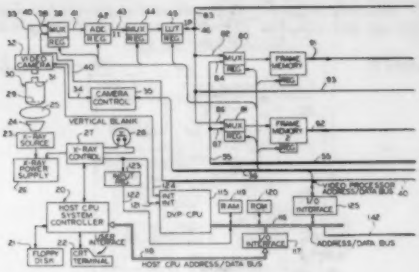
(e) an accumulator connected to the output of said multiplier for combining the multiplied signals into transformed terms.

4,449,195

DIGITAL FLUOROGRAPHIC PROCESSOR CONTROL

Edward W. Andrews, Brookfield; John E. Celek, Oconomowoc; Royal R. Morse, III, Wales, and Eugene W. Bergholz, Dousman, all of Wis., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 13, 1981, Ser. No. 321,307
Int. Cl.³ G06F *9/40, 3/14*
U.S. Cl. 364—900 4 Claims



1. A method of controlling in real time a digital video processor (DVP) having hardwired data busses and functional components including any of multiplexers, multipliers, memories, look-up tables and arithmetic logic units, interconnected by said busses which components are conditioned to operate in a particular mode in response to being provided, respectively, with instruction code words that determine the input data to the component, said data busses being variously selected to effectuate data paths to any of said components for processing in any conditioned component digital pixel data representative of x-ray image frames obtained with a video camera in an x-ray fluorography system, host central processing unit (host CPU) and memory means for storing digital code instructions for defining a plurality of x-ray image acquisition and image processing procedures, and user interface means for requesting said host CPU to effect performance of any of the defined procedures, said method comprising:

down-loading from said host CPU to a digital memory coupled to a digital video processor-central processing unit (DVP-CPU) prior to the time a procedure is to be performed, a list of instruction words (a recipe) for effecting performance of an entire processing procedure under the control of said DVP-CPU, said recipe including a sequence of configuration command packets of digital words corresponding to instruction code words by which said functional components are commanded to process data transmitted on said data busses,

providing interrupts to said DVP-CPU coincident with the occurrence of the vertical blanking intervals for the frames of said video camera, said DVP-CPU responding to each interrupt by causing said instruction code words in a packet to be provided selectively to said functional components during the current blanking interval between frame times to condition said components to operate in the instructed mode when the data is transmitted.

4,449,196

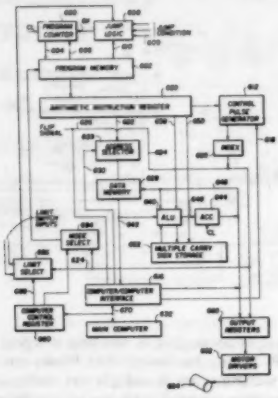
DATA PROCESSING SYSTEM FOR MULTI-PRECISION ARITHMETIC

Eric K. Pritchard, 1702 Plymouth Ct., Bowie, Md. 20716

Division of Ser. No. 34,102, Apr. 27, 1979, Pat. No. 4,262,336.
This application Oct. 2, 1980, Ser. No. 193,028
Int. Cl.³ G06F *7/50*
U.S. Cl. 364—768 8 Claims

1. A computer for performing multiple precision arithmetic on three variables divided into a plurality of words comprising:

first means for storing each of said variables as a plurality of words;
second means for storing a carry bit for a first variable;
third means for storing a carry bit for a second variable;
means for performing arithmetic operations; and
fourth means for storing instructions to perform multiple precision arithmetic by incrementing in said arithmetic means a word of said second variable with a corresponding word of a third variable and the carry bit stored in said third means from a prior second variable word and incrementing a corresponding word of said first variable with the third variable and carry incremented word of said second variable and the carry bit stored in said second means for a prior first variable word before the next corresponding words of said second and third variables are incremented.

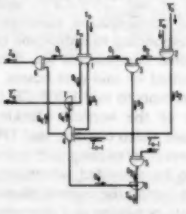


4,449,197

ONE-BIT FULL ADDER CIRCUIT

James L. Henry, Allentown, and Wendy A. Stocker, Center Valley, both of Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 10, 1982, Ser. No. 356,765
Int. Cl.³ G06F 7/50
U.S. Cl. 364—784 **2 Claims**



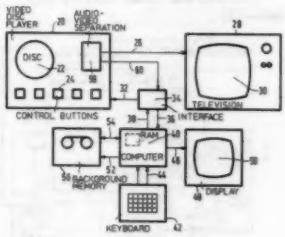
1. A one-bit full adder circuit comprising:
means forming a first NAND gate operatively connected for receiving first and second operand input signals and for producing a first output signal;
means forming a second NAND gate operatively connected for receiving complements of said first and second operand input signals and for producing a second output signal;
means forming a third NAND operatively connected for receiving said first and second output signals and for producing a third output signal;
means forming a fourth NAND gate operatively connected for receiving a carry input signal and said first and second output signals and for producing a fourth output signal;
means forming a fifth NAND gate operatively connected for receiving the complement of said carry input signal and said third output signal and for producing a fifth output signal;
means forming a sixth NAND gate operatively connected for receiving said first and fourth output signals and for producing a carry output signal;
means forming a first AND gate operatively connected for receiving said first and fourth output signals and for producing the complement of said carry output signal; and
means forming a second AND gate operatively connected for receiving said fourth and fifth output signals and for producing a sum output signal.

4,449,198

DEVICE FOR INTERACTIVE VIDEO PLAYBACK

Dirk J. Kroon, and Klaas H. J. Robers, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 23, 1980, Ser. No. 114,489
Claims priority, application Netherlands, Nov. 21, 1979, 7908476
Int. Cl.³ H04N 5/76; G06F 13/06
U.S. Cl. 364—900 **7 Claims**



1. A system for interactive video playback, said system including a modified video playback apparatus (**20**) for a selectively addressable and optically readable video disc (**22**), said playback apparatus including manually activatable control means (**24**) for the selective activation of one of a number of playback and addressing modes, and also including a first output (**26**) for the video information read from a disc and organized in frames, characterized in that the system further comprises:
a. a first input (**32**) to said playback apparatus for receiving selection signals for the selective activation, in the same way as said manually activated control means, of one of said number of playback and addressing modes;
b. an extraction element (**58**) for receiving said video information and for detecting and extracting frame numbers therefrom for presentation to a second output (**60**);
c. a computer system comprising:
c1. interface means (**34**) for interfacing to said first input and second output;
c2. a second input (**36**) which is connected to said second output (**60**) via said interface means in order to receive said frame numbers;
c3. an internal random addressable read-write memory for storing the data of alpha-numerical characters, and of selection signals for said playback apparatus to be exclusively activatable by a request signal receivable within said read-write means;
c4. a third output (**38**) which is connected to said first input (**32**) via said interface means (**34**) in order to output an activated selection signal;
c5. an internal activation output for supplying control signals and data signals to said internal read/write memory;
c6. a fourth output (**46**) for supplying, under the control of a

predetermined frame number which acts as data for the computer of said computer system, the data of a predetermined number of said alphanumerical characters as additional video information in order to display a playback or addressing mode, notably indicating a waiting situation while awaiting a request signal to be received;

c7. a keyboard (42) for inputting a request signal to said computer to activate, during a waiting situation, a change over to a next playback or addressing mode or waiting situation; and

d. said keyboard being suitable for inputting computer instructions which are organized according to a higher programming language;

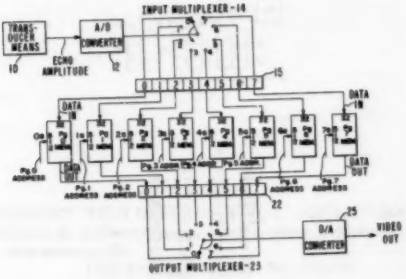
e. an interface between said playback apparatus and said computer which includes, in addition to said extraction element, emulation switches for a number of said manually activatable control means in order to emulate electrically the activated condition of the associated control means.

4,449,199

ULTRASOUND SCAN CONVERSION AND MEMORY SYSTEM

Ronald E. Daigle, Sunnyvale, Calif., assignor to Diasonics Cardio/Imaging, Ind., Salt Lake City, Utah

Filed Nov. 12, 1980, Ser. No. 206,243
Int. Cl.³ G06F *15/20*
U.S. Cl. 364—900 **30 Claims**



1. A memory arrangement for storing a two-dimensional array of M image memory columns and N image memory rows of data words and enabling parallel access for both said columns and said rows, wherein the improvement comprises:

X page memories comprising said memory arrangement, each page having a page number associated therewith and storing m page columns and n page rows of data words, wherein

$$m=M/X \text{ and } n=N$$

where X is an integer greater than 1

first means for providing a plurality of repetitive first blocks each comprising X data words corresponding to X successive data words along an image memory column,

second means coupled to said first means for selecting one of said page numbers and respective page row and column for each of said data words in each of said first blocks whereby each data word in a block is associated with a respective different page memory, and is associated with one of said page columns on its corresponding page according to its image memory column whereby the page column changes every X image columns, and wherein the page row of each data word is determined by adding the page number of the data word modulo X to the image column, said second means including means for causing each of said data words in said first blocks to be stored in the respective selected row and column of the respective selected page memory, and

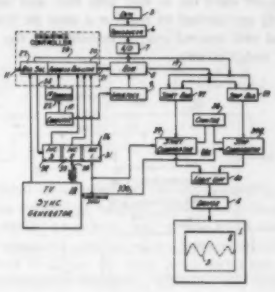
means for reading second blocks from said page memories, said second blocks each comprising X data words corresponding to X successive data words along an image memory row, by accessing a particular page column and row of each of said plurality of page memories.

4,449,200

LINE SEGMENT VIDEO DISPLAY APPARATUS

James Utzerath, 12024 W. Kaul Ave., Milwaukee, Wis. 53225

Continuation of Ser. No. 21,098, Mar. 16, 1979, abandoned, which is a division of Ser. No. 695,100, Jun. 11, 1976, Pat. No. 4,145,754. This application Mar. 12, 1981, Ser. No. 243,216
Int. Cl.³ G06F *3/153*
U.S. Cl. 364—900 **6 Claims**



1. A graphical display apparatus including a line segment display generator and including a random access memory bank having sequential data word locations for storing digitized data samples in the form of data words each of which includes a like plurality of bits, comprising means for reading a signal input and including analog to digital converter means for creating said digitized data samples in the form of said data words and sequentially storing said data words in said data word locations of said random access memory bank, said data words including at least one bit combination designated as a control function word, said converter means being constructed to prevent generation and storing of said control function word, means for controlled loading of said control function word into any of said word locations, reading means for sequentially reading of the memory bank to produce related data display signals and control signals adapted to produce a line segment display, output and routing means for controlling the transmission of the display signals to the display means, and change means connected to said reading means for detecting the presence of at least one of said control function words and coupled to activate said output and routing means to change the transmission of the data words to said display means in accordance with receipt of said control function words.

4,449,201

GEOMETRIC PROCESSING SYSTEM UTILIZING MULTIPLE IDENTICAL PROCESSORS

James H. Clark, Palo Alto, Calif., assignor to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Filed Apr. 30, 1981, Ser. No. 259,017
Int. Cl.³ G06F *15/20*
U.S. Cl. 364—900 **6 Claims**

1. A processor for use in a geometric processing system comprising a plurality of identical function units, each of said function units operating on multiple bit data and comprising a plurality of one bit slice circuits each including arithmetic logic means for operating on a bit of said data with each of one bit slice circuit interconnected with like circuits including at least one lower order circuit for operating on a lower order bit an at

least one higher order circuit for operating on a higher order bit of said multiple bit data, each of said one bit slice circuits including a multiple level storage means which cooperatively functions as a dispersed data stack for said function unit, each one bit slice circuit comprising

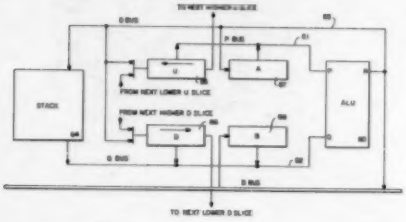
a single bit arithmetic logic unit having a first ALU input, a second ALU input, and an ALU output,

a first bus for transferring a data bit to said first ALU input,

a second bus for transferring a data bit to said second ALU input,

a third bus for transferring a data bit from said ALU output,

an upshifting register having an input and first and second outputs, said input operably connected to receive a data bit from a lower order circuit and said first output transferring the data bit to said first bus, and said first input operably connected to receive a data bit from said third bus and said second output transferring the data bit to a higher order circuit,



a downshifting register having an input and first and second outputs operably connected to receive a data bit from a higher order circuit and transferring the data bit to said second bus, and said first input operably connected to receive a data bit from said third bus and said second output transferring the data bit to a lower order circuit,

an accumulator register interconnected between said third bus and said first bus for receiving a data bit from said ALU output and applying said data bit to said first ALU input,

an interface register connected to said second bus for transferring a data bit from an input/output bus to said second bus, and

a multiple level register interconnected with said second and said third bus for saving and restoring bits for processing, and

control means for controlling said function units to cooperatively provide at least a portion of one of the functions including matrix transformations, clipping and scaling functions.

4,449,202

FULL DUPLEX INTEGRATED CIRCUIT COMMUNICATION CONTROLLER

George W. Knapp, Cambridge; Bernard B. Spaulding, The Plains, and John T. Tolbert, Cambridge, all of Ohio, assignors to NCR Corporation, Dayton, Ohio

Filed Dec. 4, 1981, Ser. No. 327,650

Int. Cl.[3] **G06F** *13/00*; **H01L** *25/00*

U.S. Cl. 364—900 **11 Claims**

1. An integrated circuit for controlling the transfer of a data message between a plurality of peripheral devices and an associated peripheral device each having a processor and a memory connected to said integrated circuit, said data message including encoded data signals, said integrated circuit comprising:

a transmission channel for transmitting data messages between said peripheral devices;

first storage means connected to said transmission channel for storing a data message transmitted over said transmission channel from another of said peripheral devices;

first means for controlling the storing of a data message in said storing means;

second storage means for storing a plurality of first control signals for controlling the operation of said controlling means;

said integrated circuit having first, second, third and fourth sequentially located edges;

said first storage means being located substantially closer to said third edge than to said first edge;

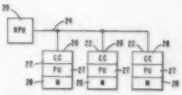
said first controlling means being located substantially closer to said fourth edge than to said second edge;

and said second storage means being located adjacent a corner formed by said third and fourth edges.

6. An integrated circuit for controlling the transfer of a data message between one of a plurality of peripheral devices and an associated peripheral device each having a processor and a memory connected to said integrated circuit, said data message including opening and closing control signals, address signals, encoded data signals and message validity signals, said integrated circuit comprising in combination:

a plurality of transmission lines for transmitting data messages between the peripheral devices and between the integrated circuit and its associated memory and processor;

first means connected to said transmission lines for receiving and storing a data message received over said transmission



lines, said first storing means including a plurality of shift registers, each of which stores a portion of the data message including the address signals;

first means connected to said transmission lines and to said first receiving and storing means for controlling the operation of said first storing means and for decoding the data signals in the received data message;

means connected to said storing means for checking the message validity signals in the received data message;

second means for storing the address of the associated peripheral device;

comparing means connected to said first and second storing means for generating a first control signal in response to the occurrence of a coincidence between the address of the associated peripheral device and the address signals of the received data message;

first control storage means for storing a plurality of second control signals for controlling the operation of said decoding means, said checking means and said comparing means thereby enabling said integrated circuit means to receive and transfer the data signals to the memory of its associated peripheral device in response to the generation of said second control signals;

second controlling means connected to said transmission lines and said first control storage means, said first storage means storing third control signals for enabling said sec-

ond controlling means to transmit a data message over said transmission channel to another of said peripheral devices;

said integrated circuit having first, second, third and fourth sequentially located edges;

said transmission lines engaging said second, third and fourth edges;

said first receiving and storing means being located substantially closer to said third edge than to said first edge and arranged along said third edge to reduce the length of said third edge;

said first controlling means being located substantially closer to said fourth edge than to said second edge;

said checking means being located substantially closer to said third edge than to said first edge;

said second address storing means being located substantially closer to said third edge than to said first edge;

said second controlling means being located substantially closer to said first edge than to said fourth edge;

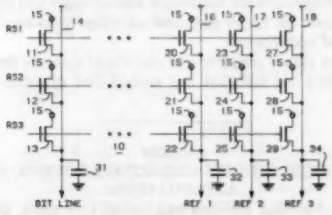
said comparing means being located substantially closer to said fourth edge than to said second edge adjacent said first and second storing means to reduce the length of the interconnecting lines and thereby the capacitance and resistance of the circuit and said first storage means being located adjacent the corner formed by said third and fourth edges.

4,449,203

MEMORY WITH REFERENCE VOLTAGE GENERATOR

Richard H. Adlhoch, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 25, 1981, Ser. No. 238,178
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—104 **9 Claims**



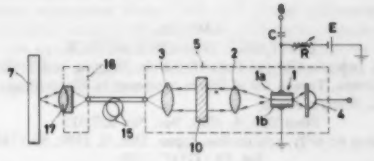
1. A read only memory having a plurality of memory cells arranged in columns and rows, the memory also comprising: the memory cells being capable of providing an output having more than two states; a plurality of comparators selectively coupled to the columns; a plurality of reference sources arranged in groups wherein each group is coupled to a different comparator, each of the reference sources is a transistor connected in a source follower configuration and each of the transistors is a field effect transistor and at least two of the transistors have threshold voltages different from each other; and logic means coupled to the comparators to receive an output provided by each comparator, the logic means providing digital bits representative of the state of a selected memory cell.

4,449,204

INFORMATION PROCESSING APPARATUS USING A SEMICONDUCTOR LASER DIODE

Junichi Shimada; Yoshinobu Mitsuhashi; Kenjiro Sakurai; Takitaro Morikawa, all of Ibaragi, and Shuichi Mitsuzuka, Toda, all of Japan, assignors to Agency of Industrial Science and Technology and Ministry of International Trade and Industry, both of Tokyo, Japan

Filed Mar. 27, 1981, Ser. No. 248,211
Claims priority, application Japan, Mar. 31, 1980, 55-40397
Int. Cl.³ G11C *13/08*
U.S. Cl. 365—127 **4 Claims**



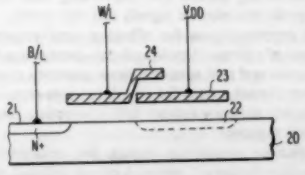
1. In an optical information processing apparatus comprising an information recording medium, means including a semiconductor laser diode, a current input means and a terminal voltage detector means adapted to issue a laser beam and an optical system adapted to direct the laser beam from the laser diode toward the information recording medium, and then return the reflected laser beam from said information recording medium to said semiconductor laser diode, the improvement wherein said optical system is provided with a λ/4 plate capable of rotating the plane of polarization of the reflected beam from said recording medium by 90° relative to the plane of polarization of the issued laser beam, thereby permitting a variation in the terminal voltage input to said detector means which corresponds to the variation in the intensity of the reflected beam being detected by said semiconductor diode and which is linearly related to the output of said current input means.

4,449,205

DYNAMIC RAM WITH NON-VOLATILE BACK-UP STORAGE AND METHOD OF OPERATION THEREOF

Charles R. Hoffman, Raleigh, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 19, 1982, Ser. No. 350,479
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—182 **14 Claims**



3. A semiconductor memory device having a plurality of memory cells, each of said memory cells comprising:

an FET dynamic memory unit, said FET dynamic memory unit including a first FET having a source coupled to a bit line of said memory device, a drain coupled to a data node of the cell and a gate coupled to a word line of said memory device, and a first capacitor coupled between said data node and a first pulsed voltage source; and

a non-volatile memory unit coupled to said dynamic memory unit for storing data from said dynamic memory unit and transferring data to said dynamic memory unit in a

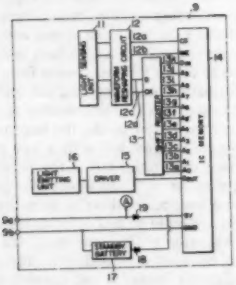
non-volatile manner, said non-volatile memory cell comprising a dual gate second FET having a source coupled to said data node, and a first gate comprising a floating gate, a second capacitor coupled between said floating gate and said data node, a third capacitor coupled between said floating gate and a second pulsed voltage source with a dielectric material of said second capacitor comprising DEIS material, and a second gate coupled to a third pulsed voltage source.

4,449,206

PORTABLE MEMORY DEVICE

Naoki Tokitsu, Chiryu; Toshihiko Itoh, Nagoya, and Toshitaka Fujiwara, Toyota, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Dec. 4, 1981, Ser. No. 327,612
Claims priority, application Japan, Dec. 9, 1980, 55-174052
Int. Cl.³ G11C *7/00*
U.S. Cl. 365—229 **5 Claims**



1. A portable memory device for receiving power from an external means and for transmitting and receiving various signals to and from the external means, said device comprising:

semiconductor memory means which can be written into and read from for storing data signals;

a converting circuit including nonconductive connector means for receiving write and read control signals and for receiving and transmitting data and for receiving address information in the form of nonconductive signals, and converting means for converting said nonconductive signals into electric signals and vice versa;

shift register means for effecting serial-to-parallel conversion of address signals and data between said converting circuit and said semiconductor memory means;

power circuit means for supplying power to said semiconductor memory means, said converting circuit, and said shift register;

conductive connector means for selectively providing power from said external means to said power circuit means;

a standby battery for providing a backup power supply for said semiconductor memory means when said conductor connector means is not providing power to said power circuit means;

diode means for preventing current from being supplied from said standby battery to said converting circuit and said shift register; and

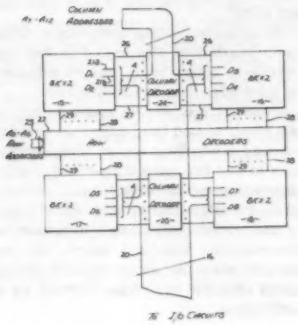
a case accommodating said conductive connector means, said semiconductor memory means, said standby battery, said converting circuit, said shift register means, said power circuit means, and said diode means.

4,449,207

BYTE-WIDE DYNAMIC RAM WITH MULTIPLEXED INTERNAL BUSES

Roger I. Kung; Stephen T. Flannagan; Jonathan N. Spitz, all of Beaverton; Perry H. Pelley, III, Aloha; Robert S. Riley, Gaston, and Douglas J. Covert, Aloha, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Apr. 29, 1982, Ser. No. 373,218
Int. Cl.³ G11C *13/00*
U.S. Cl. 365—230 **15 Claims**



6. In a random-access memory disposed on a substrate an improvement comprising:

at least a first pair of input/output lines disposed within said memory;

a sense amplifier coupled to said first input/output lines for sensing data on said lines;

a write buffer coupled to said first input/output lines for writing data into said memory through said lines;

a memory input/output terminal;

a data-in buffer coupled to said terminal;

a data-out buffer coupled to said terminal;

a second pair of input/output lines interconnecting said data-in and data-out buffers with said sense amplifier and said write buffer;

multiplexing means for enabling said sense amplifier and data-out buffer and disabling said data-in buffer and write buffer when data is read out of said memory, and for enabling said write buffer and data-in buffer and disabling said data-out buffer and sense amplifier when data is read out of said memory;

whereby data is read into and out of said memory from said terminal via said first and second pair of input/output lines.

4,449,208

LITHOLOGIC STUDIES UTILIZING ACOUSTIC WAVE ATTENUATION

George P. Moeckel, Houston, and George C. Wallick, Duncanville, both of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 23, 1981, Ser. No. 324,289
Int. Cl.³ G01V *1/40, 1/30*
U.S. Cl. 367—30 **11 Claims**

1. A tool for seismic exploration comprising:

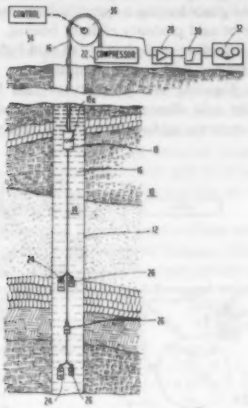
a source of acoustic energy;

first paired sensor means, comprising means for detecting the flux of acoustic energy through a unit area, paired with means for detecting the absolute pressure, said first paired sensor means being spaced from said source of acoustic energy;

second paired sensor means comprising means for detecting the flux of acoustic energy through a unit area and means for detecting the absolute pressure, said second paired

means being spaced from said source of acoustic energy and from said first pair, and

a third means for detection of pressure;



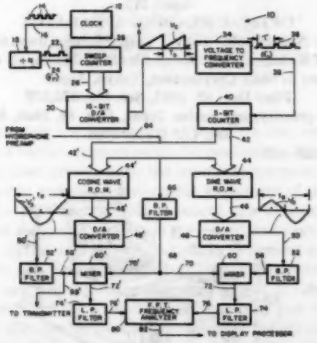
wherein said source of energy and said detectors are spaced from one another along a cable and are adapted to be raised and lowered within a borehole in the earth for seismic exploration purposes.

4,449,209

UTILIZATION OF ENTIRE TRANSMITTED BANDWIDTH IN CONTINUOUS TRANSMISSION FM SONAR

William J. Zehner, Lynn Haven, and David P. Skinner, Panama City, both of Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 11, 1982, Ser. No. 338,787
Int. Cl.³ G01S *15/34*
U.S. Cl. 367—102 **6 Claims**



1. A continuous transmission frequency modulated sonar of the type wherein a target range signal is generated in proportion to the difference frequency between a varying transmission frequency that varies linearly during repetitive frequency sweeps and the frequency of a return signal, said sonar comprising:

signal generating means for simultaneously generating direct and quadrature signals at said varying transmission frequency, one of said direct and quadrature signals being used to project an insonification signal;

complex demodulator means, responsive to said direct and quadrature signals and to said return signal, for providing first and second outputs including first and second sum and first and second difference frequencies, respectively, said difference frequencies being characterized as positive when the target is at such a range that the return signal is received during a predetermined frequency sweep and being characterized as negative when the target is at such a range that the return signal is received during a subsequent sweep;

first and second filter means, responsive to said first and second outputs of said demodulator means for rejecting said sum frequencies and passing said first and second difference frequencies; and

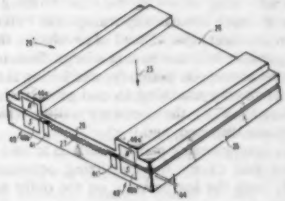
means, responsive to said first and second difference frequencies, for providing target range signals corresponding only to said first and second difference frequencies characterized as positive, whereby ambiguous target range signals are avoided.

4,449,210

FIBER OPTIC HYDROPHONE TRANSDUCERS

Jon H. Myer, Woodland Hills, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

Filed Dec. 21, 1981, Ser. No. 332,791
Int. Cl.³ H04R *17/00*
U.S. Cl. 367—149 **12 Claims**



1. A fiber optic hydrophone for detecting applied acoustic signals, said hydrophone including a light source, a detector, a waveguide disposed to transmit light from said light source to said detector, and a first member having a plurality of ridges thereon positioned at a first predetermined pitch and a second ridged member having a plurality of ridges thereon positioned substantially parallel to said ridges on said first member to form first and second ridged members having parallel juxtaposed rippled surfaces in contact with the surface of said waveguide, wherein the improvement comprises:

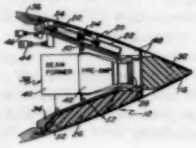
one of said rippled surfaces having a first predetermined ripple pitch, the other of said rippled surfaces having a ripple pitch different than said first predetermined ripple pitch whereby the selection of the ripple pitch relationship determines the spatial sensitivity distribution of said hydrophone, so that applied acoustic signals modulate the light transmitted through said waveguide by means of microbend attenuation in the waveguide, the modulated light providing an indication of the presence of acoustic signals.

4,449,211

LOW DRAG BODY CONFORMAL ACOUSTIC ARRAY

Richard L. Schmidt; Edmund J. Sullivan, both of Portsmouth; Bernard J. Myers, Bristol, all of R.I., and Edward G. Liszka, Bethesda, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 6, 1982, Ser. No. 395,388
Int. Cl.³ H04B *13/00*
U.S. Cl. 367—153 **9 Claims**



1. A conformal array comprising:

a pressure hull, fixedly attached to the forward end of a torpedo midbody, having the general shape of a shell of revolution tapering from a diameter smaller than the diameter of said torpedo midbody to a point thereby forming a preselected shape, and being truncated a preselected distance from the torpedo end thereof to form a smaller diameter end said pressure hull having inner and outer surfaces of revolution;

a plurality of conformal array means, affixed to and conforming to the shape of the outer surface of said pressure hull, for receiving acoustic pressure signals and converting said pressure signals to proportional electrical signals;

beamforming means, located within and attached to the smaller end of said pressure hull, for receiving said proportional electrical signals from said array means;

connecting means, fixedly mounted on the smaller end of said pressure hull and connected to said beamforming means, for transmitting said proportional electrical signals from said array means to said beamforming means;

a thin and hence acoustically transparent outer fairing, having an identical tapered shell of revolution shape as that of said pressure hull and having a large diameter the same as that of said torpedo midbody, said fairing at the larger end thereof fixedly attaching to said pressure hull forming a conformal cavity therebetween within which said array means are disposed; and

pressure compensating means attached to said pressure hull within said cavity for equalizing pressure within said cavity with the sea pressure on the outer surface of said fairing.

4,449,212

MULTI-BEAM OPTICAL RECORD AND PLAYBACK APPARATUS

Charles W. Reno, Cherry Hill, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jul. 30, 1981, Ser. No. 288,550
Int. Cl.³ G11B *7/00*; G02F *1/33*
U.S. Cl. 369—44 **11 Claims**

1. A data retrieval system for recovering data from a record medium, said data being recorded in a multiplicity of separate tracks on a surface of said record medium, said system comprising:

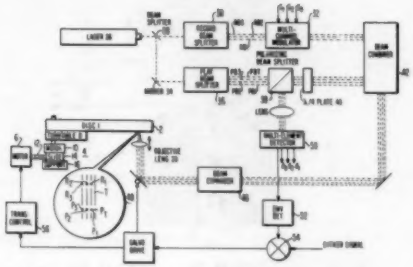
means for supporting said record medium;

a light source for providing a beam of light;

means for splitting said beam of light into a plurality of light beams, said splitting means effecting a dithering of one of said plurality of light beams such that said one of said plurality of light beams exhibits periodic excursions orthogonal to the elongated dimension of said tracks, said splitting means having a single transducer which is driven by a plurality of drive signals which deflect said beam of light to produce said plurality of light beams, the angle of deflection of each of said plurality of light beams being proportional to the frequency of the drive signal used to deflect said each of said light beams, one of said plurality of drive signals having a variable frequency for dithering said one of said plurality of light beams;

means for directing said plurality of said light beams toward said surface of said record medium;

means for focusing said plurality of said light beams, directed by said directing means, to produce diffraction limited spots on said surface of said record medium;



means for establishing relative motion between said light beam spots and said surface of said record medium;

said directing means including means for deflecting the direction of said plurality of beams during said relative motion;

means, responsive to the position of said light spot of said dithered light beam on said surface of said record medium, for generating a control signal for controlling said deflecting means; and

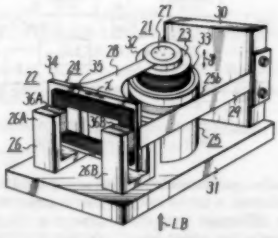
said deflecting means being moved to adjust the direction of said plurality of beams in response to said control signal from said generating means.

4,449,213

OPTICAL READING APPARATUS

Kazutaka Noborimoto, Tokyo; Keiji Maruta; Junichi Suzuki, both of Kanagawa, and Kenji Shintani, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 15, 1981, Ser. No. 330,875
Claims priority, application Japan, Dec. 18, 1980, 55-179891
Int. Cl.³ G11B *7/08*
U.S. Cl. 369—45 **6 Claims**



1. In an optical reading apparatus, the combination of:

a fixed support member;

a first pair of parallel, spaced apart leaf springs fixed at one ends thereof to said fixed support member and each having two opposed faces so as to be flexible substantially

only in a first direction perpendicular to said faces of the first pair of leaf springs;

a movable support member extending between and connected to other ends of said leaf springs for movements relative to said fixed support member in said first direction;

a second pair of parallel, spaced apart leaf springs fixed at one ends thereof to said movable support member and extending from the latter generally parallel to said first pair of leaf springs in the direction toward said one ends of the latter, each of said second pair of leaf springs having two opposed faces which are oriented perpendicularly to said faces of said first pair of leaf springs so as to be flexible substantially only in a second direction at right angles to said first direction; and

objective lens means located intermediate said first pair of leaf springs and being mounted between other ends of said second pair of leaf springs for movements relative to said fixed support member in said first and second directions.

4,449,214

RECORD CLEANING MECHANISM

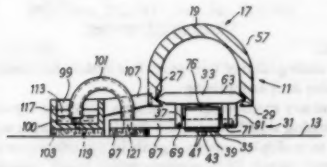
Alexander R. Rangabe, Stoneacre, Denmead, Portsmouth, England

Filed Sep. 18, 1981, Ser. No. 303,709

Claims priority, application United Kingdom, Sep. 26, 1980, 8031131

Int. Cl.³ G11B *3/58*

U.S. Cl. 369—72 **20 Claims**



1. Cleaning mechanism for phonograph disc records, comprising a carrier, support means for positioning the carrier over a disc record groove when the latter is in operative location on a turntable and adapted to enable movement of the carrier in said operative location of the record in a direction generally towards the axis of rotation of the record, and a probe mounted on the carrier, said probe being a unitary element and generally rod-like and having a relatively stiff, hard wearing tip part which engages within the record groove at or substantially at the bottom of the groove, and a mounting part substantially longer than the tip part, extending from the tip part and supported on the carrier at a location remote from the tip part so as to impart flexibility to the mounting part, the mounting part and the tip part being mutually inclined so that, in operation, the mounting part is in a trailing attitude whilst the tip part is inclined at an acute angle relatively to the record with respect to the direction of travel of the point on the record engaged by the tip part, so as to maintain during rotation of the record a bulldozing action by the tip part to raise noise inducing particles out of the record groove, whilst the mounting part, through flexure thereof, enables the tip part to surmount obstructions in the groove.

4,449,215

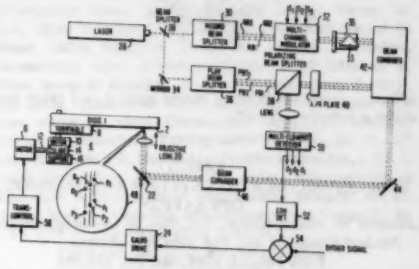
APPARATUS FOR VARYING TRACK SPACING IN MULTI-TRACK OPTICAL RECORD SYSTEMS

Charles W. Reno, Cherry Hill, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 24, 1982, Ser. No. 361,220

Int. Cl.³ G11B *7/00*

U.S. Cl. 369—111 **14 Claims**



1. A multiple beam optical information recording or retrieval apparatus for use in recording data on or playing back data from a surface of a disc-shaped record medium having a multiple track format, said apparatus comprising:

means for supporting said record medium;

means including a light source for providing a plurality of beams of light, each of said plurality of beams having a beam axis, the beam axes of said each of said plurality of beams being substantially aligned in a plane;

means for directing said plurality of said light beams to said surface of said record medium along a given light path;

means for focusing said plurality of said light beams to produce spots on said surface of said record medium;

means for establishing relative motion between said light beam spots and said surface of said record medium such that one of said light beam spots traces a predetermined path on said surface of said record medium;

said plurality of light beams being aligned such that said light spots are incident on said surface of said record medium and the centers of said spots lie on a straight line; and

means, positioned in said light path, for varying the angle formed between said predetermined path and said straight line through the center of said spots to adjust the track spacing between adjacent tracks in said multiple track format, said varying means being rotated about a given axis and being coaxial with a symmetrical axis of said plurality of beams.

4,449,216

PICKUP ARM DEVICE

Shinichi Kudo, Neyagawa, and Haruyuki Otani, Kadoma, both of Japan, assignors to Matsushita Electric Industrial Company, Kadoma, Japan

Filed Oct. 16, 1981, Ser. No. 312,011

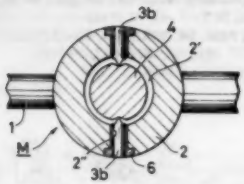
Claims priority, application Japan, Oct. 17, 1980, 55-146162; Jun. 5, 1981, 56-87298

Int. Cl.³ G11B *3/10*

U.S. Cl. 369—255 **6 Claims**

1. A pickup arm device for a disc phonograph player comprising a pickup arm, a pivot holder integrally combined with said pickup arm and having an opening substantially at the center thereof to receive therein a pivot bearing and a pair of through-holes at opposite sides of said pivot holder, and a pair of pivots inserted into the pair of through-holes until they come into contact with said pivot bearing from the opposite sides, at least one of the paired pivots being a straight pivot free

of any irregularities on the side surface thereof and being fixedly secured to said pivot holder by means of a hardenable



adhesive cured while being biased against said pivot bearing under a preselected load.

4,449,217

PCM COMMUNICATION SYSTEM AND METHOD OF OPERATION

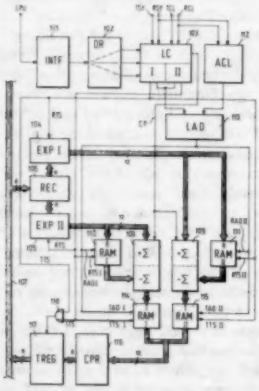
Joachim W. Simon, Goslar, Fed. Rep. of Germany, assignor to Nixdorf Computer AG, Fed. Rep. of Germany

Filed Feb. 12, 1981, Ser. No. 233,816

Claims priority, application Fed. Rep. of Germany, Feb. 15, 1980, 3005739

Int. Cl.³ H04M *3/56*

U.S. Cl. 370—62 **9 Claims**



1. In a process for control of the transmission of PCM signals between stations of a PCM time-division multiplex communications network in a conference service by means of a central conference control circuit, said network being of the type in which a central processing unit allots to each station involved a transmitting time slot within a cyclically repeating time bracket of known lengths and a receiving time slot with said cyclically repeating time bracket, and, in which, in one time bracket, PCM signals transmitted from the conference-related stations and received in the central conference control circuit are summed algebraically, stored temporarily, and for transmission to the respective conference-related stations are subjected to a partial summation, with the elimination of the PCM signal emitted by each respective station, in which partial summation the PCM signals corresponding to the partial sums, are transmitted during another time bracket to the conference-related stations, and in which time slots are provided within predetermined portions of the respective time bracket for the transmission of signals not relevant to the conference; the improvement which comprises:

(a) performing said algebraic summation directly upon the receipt of the PCM signals,

(b) simultaneously with step (a) performing said temporary PCM signal storage in a manner specific to the station only until the expiration of the next succeeding time slots for signals not relevant to the conference,

(c) temporarily storing results of said partial summation in said slots for transmission of signal not relevant to the conference; and

(d) transmitting the PCM signals corresponding to the partial sums to the conference-related stations immediately after said slots.

4,449,218

ANALOG/DIGITAL TELECOMMUNICATION SUBSCRIBER STATION

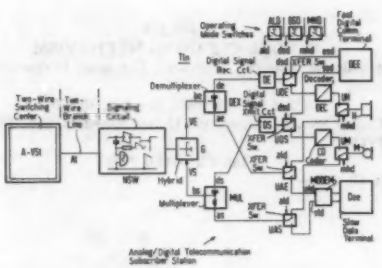
Herbert Strehl, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Oct. 7, 1981, Ser. No. 309,190

Claims priority, application Fed. Rep. of Germany, Oct. 24, 1980, 3040263

Int. Cl.³ H04J *1/08*

U.S. Cl. 370—69.1 **20 Claims**



1. An analog/digital two-party line system for connection to a two-wire line, comprising:

a frequency multiplexer including a multiplex signal output, an analog signal input and a digitial signal input and operable to multiplex analog signals in the telephone band and digital signals in a predetermined band outside of the telephone band;

a frequency demultiplexer including an analog signal output, a digital signal output and a multiplex signal input, and operable to demultiplex analog signals in the telephone band and digital signals in the predetermined band outside of the telephone band;

a broad-band hybrid including a two-wire input/output for connection to a two-wire line, a transmission branch connected to said multiplex signal output of said multiplexer, and a receiving branch connected to said multiplex signal input of said demultiplexer;

a digital transmission circuit connected to said digital signal input of said multiplexer;

a digital receiving circuit connected to said digital signal output of said multiplexer;

a first telephone transmitter and a first telephone receiver respectively connected to said analog signal input and said analog signal output;

an encoder and a decoder respectively connected to said digital transmission and receiving circuits; and

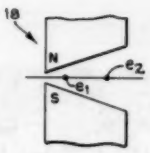
a second telephone transmitter and a second telephone receiver respectively connected to said digital transmission and receiving circuits.

4,449,219

FREE ELECTRON LASER

Todd I. Smith, 2260 St. Francis Dr., Palo Alto, Calif. 94303; Luis R. Elias, 1560 Ashcroft Way, Sunnyvale, Calif. 94087, and John M. J. Madey, 2120 Amherst St., Palo Alto, Calif. 94306

Filed Jul. 6, 1979, Ser. No. 55,163
Int. Cl.[3] H01S 3/09
U.S. Cl. 372—2 11 Claims



1. A free electron laser which comprises

means for directing a relativistic electron beam along a predetermined path,

means for dispersing electrons laterally and/or angularly in response to energy differences thereof, and

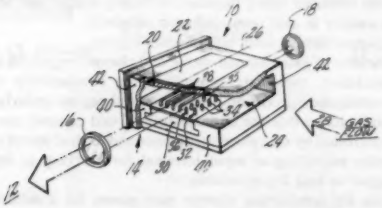
means disposed along said path for periodically deflecting the dispersed electrons transversely relative to said path in alternating opposite directions, said deflecting means establishing fields which vary between paths of dispersed electrons.

4,449,220

APPARATUS AND METHOD FOR DEPOSITION OF ELECTRICAL POWER IN AN ELECTRIC DISCHARGE LASER

Peter P. Chenausky; Robert H. Bullis, both of Avon; Clyde O. Brown, Newington, all of Conn., and Ernest B. Manning, deceased, late of Bolton, Conn. (by Anne M. Manning, heir), assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 27, 1977, Ser. No. 864,961
Int. Cl.[3] H01S 3/097
U.S. Cl. 372—83 22 Claims



1. An apparatus for the deposition of electrical power into a gaseous medium flowing through a discharge region comprising:

an anode having a configuration of a plane and defining one side of a gas path through the discharge region;

a cathode, disposed in a spaced apart substantially parallel relation to the anode and defining another side of the gas path through the discharge region, including at least one row of preionization electrodes extending into the discharge region for applying a first electric potential to ionize gas flowing past the preionization electrodes and at least one power electrode disposed downstream of and substantially parallel to the row of preionization electrodes, extending into the discharge region, having a substantially parallel relation to the anode for applying a second electric potential to generate a discharge, substantially diffuse and stable, between the cathode and the anode; and

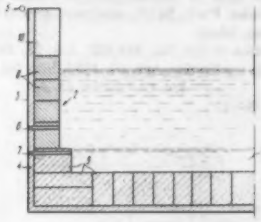
ballast means connected to the preionization electrodes for controlling electrical current passing from the preionization electrodes to the anode through the ionized gas.

4,449,221

ORE-SMELTING ELECTRICAL FURNACE BATH

Viktor R. Keller, ulitsa Lenina, 4, kv. 48, poselok Pobugskoe, Golovanevsky raion, Kirovogradskaya oblast; Valery D. Linev, ulitsa Gertsena, 11/6, kv. 26, Leningrad; Sergei G. Mittsev, ulitsa Pirogova, 1, kv. 37, poselok Pobugskoe, Golovanevsky raion, Kirovogradskaya oblast; Mikhail Z. Zhivov, prospekt Engelsa, 28, kv. 107, Leningrad; Boris B. Pelts, ulitsa Lesnaya, 63/43, kv. 157, Moscow; Alexandr N. Popov, ulitsa Marshala Timoshenko, 28, kv. 58, Moscow; Vladimir L. Rozenberg, Leningradsky prospekt, 59, kv. 27, Moscow; Alexandr E. Burochkin, Pochtovy pereulok, 1, kv. 1, poselok Pobugskoe, Golovanevsky raion, Kirovogradskaya oblast; Jury A. Romanenkov, Svetlanovsky prospekt, 66, kv. 131, and Boris P. Onischin, naberezhnaya reki Fontanki, 50, kv. 44, both of Leningrad, all of U.S.S.R.

Filed Apr. 26, 1982, Ser. No. 371,812
Int. Cl.[3] F27D 1/04
U.S. Cl. 373—44 4 Claims



1. A bath for ore-smelting electrical furnace intended for reduction electrical smelting processes with electrodes buried into the melted slag, comprising a metallic jacket provided with means for its external cooling, a sealing layer adjacent to said jacket, and a lining adjacent to said sealing layer and forming the walls and bottom of the bath, said walls in the melted slag zone being made from graphitized refractory blocks having a thickness at which the total thermal resistance of these blocks and of said sealing layer ranges from 0.01 to 0.09 m^2.hr.deg./kcal, said walls below the melted slag zone and said bottom consisting of refractory carbon blocks.

4,449,222

DIGITAL MODULATION QUALITY MONITOR

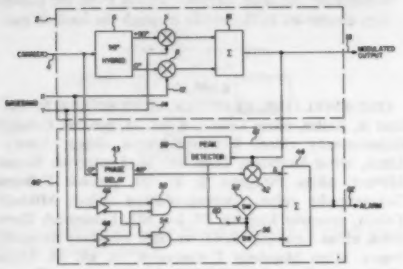
Joseph A. Crossett, III, Richardson, and Paul R. Hartmann, Allen, both of Tex., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Nov. 23, 1981, Ser. No. 324,166
Int. Cl.[3] H03K 13/32
U.S. Cl. 375—10 13 Claims

1. In modulation of a carrier signal with a digital baseband signal, a technique for quality monitoring the modulated signal without full demodulation comprising:

partially demodulating said modulated signal so as to yield a partial signal set related to the set of baseband signal values by a predetermined mapping between the members thereof and the members of the partial signal set, said partial signal set having fewer members than the baseband signal set; and

translating said baseband signal, in accordance with said mapping, providing translated signal values corresponding to members of said partial signal set, for correlation against said signal which has been partially demodulated.



4,449,223

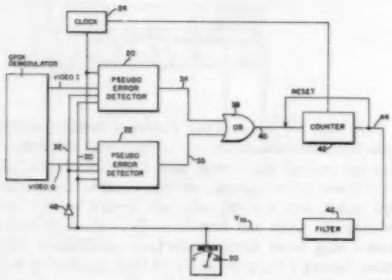
EYE OPENING MONITOR

Nathan A. Liskov, Waltham; Robert G. Curtis; Caesar J. Favaloro, both of Sudbury, all of Mass., and Geogory L. Pence, Allen Park, Mich., assignors to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 162,339, Jun. 23, 1980, abandoned. This application Apr. 30, 1982, Ser. No. 373,763

Int. Cl.³ H03K *13/32*

U.S. Cl. 375—10 **2 Claims**



1. An eye opening monitor circuit for a QPSK demodulator, comprising:

means for comparing the in-phase signal from said demodulator to a voltage range defined by $-V_{th}$ to $+V_{th}$, the output of said in-phase comparing means being a first input to an OR gate;

means for comparing the quadrature-phase signal from said demodulator to said voltage range defined by $-V_{th}$ to $+V_{th}$, the output of said quadrature-phase comparing means being the second input to said OR gate;

means responsive to the output of said OR gate for generating said $-V_{th}$ and $+V_{th}$ voltages, the range of which is decreased when either said in-phase or quadrature-phase signal is within said range defined by $-V_{th}$ and $+V_{th}$ voltages;

said generating means comprising a clocked counter providing a carry-out pulse at a predetermined count, the period between carry-out pulses being altered by resetting said counter with said output of said OR gate; and

means for providing a visual display proportional to said range.

4,449,224

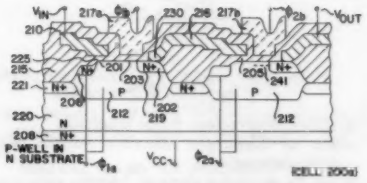
DYNAMIC MERGED LOAD LOGIC (MLL) AND MERGED LOAD MEMORY (MLM)

Eliyahou Harari, 2320 Friars La., Los Altos, Calif. 94022

Filed Dec. 29, 1980, Ser. No. 220,491

Int. Cl.³ H01L *27/04, 29/78;* G11C *11/40*

U.S. Cl. 377—79 **41 Claims**



1. A dynamic logic element formed in semiconductor material comprising:

a semiconductor substrate of a first conductivity type;

a first region of second conductivity type formed in said substrate with a first PN junction formed between said first region and said substrate;

means for reverse biasing said first PN junction thereby to electrically isolate said first region from said substrate;

an MOS transistor with source and drain each of said first conductivity type formed in said first region with a second PN junction formed between said drain and said first region, said first region containing a channel region between said source and drain;

a bipolar load transistor possessing an emitter, a base and a collector, said emitter also comprising the drain of said MOS transistor, said base comprising said first region and said collector being disposed vertically below said MOS transistor in said semiconductor substrate;

insulation formed over said channel region;

a plurality of gates formed above said channel region on said insulation, each gate controlling the conductivity of a corresponding portion of said channel region underlying said gate so that the entire length of said channel can be controlled by said plurality of gates and at least one of said gates providing an input terminal for carrying an input signal to said logic element;

means for conducting charge, said means for conducting being in electrical contact with said drain-emitter region and forming an output terminal for said logic element;

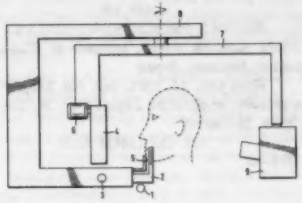
means for applying signals to each of said plurality of gates, to said source region of said MOS transistor and to the base of said bipolar transistor, said means for applying signals including means for applying a first clock signal during a first time interval to the base of said bipolar transistor and means for applying a second clock signal during a second time interval to at least one of said plurality of gates, said first clock signal tending to leave the junction between said base and said emitter reverse biased during said second time interval following said first time interval, said second clock signal tending to induce an inversion layer in said first region under said at least one of said plurality of gates during said second time interval;

means for applying a selected potential to said collector of said bipolar transistor.

4,449,225
METHOD TO BE USED IN PANORAMIC X-RAY PHOTOGRAPHY AND AN APPARATUS FOR CARRYING OUT THE METHOD

Erkki Tammisalo, Linnunpiiätie 3, SF-20840, Turku 84, Finland

Filed Feb. 16, 1982, Ser. No. 348,996
Claims priority, application Finland, Feb. 20, 1981, 810530
Int. Cl.³ G03B 41/16
U.S. Cl. 378—39 5 Claims

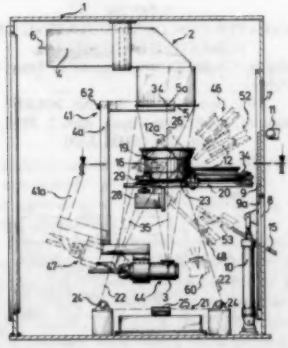


1. In a method to be used in panoramic X-ray photography for adjusting the shape of the layer which is photographed with precision to the correct point in relation to the patient before photographing is started, and of the type wherein an X-ray device performs a rotational movement and comprises an X-ray source and a moving film, and wherein the patient is supported by means of support members and, for the purpose of adjustment, a viewing member is moved to the correct point in relation to the patient, the improvement comprising maintaining the support members and the suspending point of the X-ray device in a stationary position in relation to each other and performing the pre-adjustment of the shape of the layer which is photographed with precision by preselecting, on the basis of the position or reading of the viewing member, the film speed.

4,449,226
VEHICLE WHEEL TESTING OR INSPECTION SYSTEMS

Wilhelm Collmann, Auf der Höhe 25, 2400 Lübeck, Fed. Rep. of Germany

Filed Apr. 12, 1982, Ser. No. 367,424
Claims priority, application Fed. Rep. of Germany, Apr. 18, 1981, 3115735
Int. Cl.³ G03B 41/16
U.S. Cl. 378—58 11 Claims

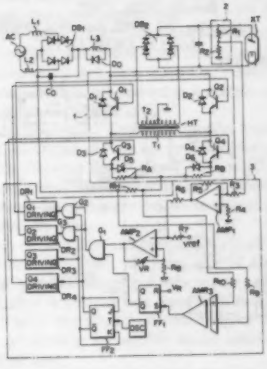


1. In a system for X-ray inspection of a motor vehicle wheel comprising a rim and an inner support structure, of the kind comprising an X-ray tube situated in a radiation-proof casing and a stationary X-ray screen with a post-positioned monitor, for totally transilluminating the wheel element held by sections in the beam path of the X-ray tube, the axial rim halves and the inner support structure being transilluminated in the corresponding testing or inspection position by rotation of the wheel, and a system for reception of the wheel which is fed in rim-down, for placing said wheel in the beam path as well as discharging the wheel after inspection, the invention which consists in that the system comprises a chute which is displaceable around a horizontal pivot spindle and intended for the wheel, said chute being pivotally displaceable into the positions in question for reception, immobilisation during inspection and discharge of the wheel, and wherein said pivot spindle of said chute extends parallel to said X-ray screen as well as to the working surface of said chute, said chute having a stop system for location of the inspection position of the wheel on said chute and a clamping mechanism for immobilising the wheel slipped into the inspection position, and wherein said X-ray tube is displaceable at least between a first operating position for transillumination of said axial rim halves and a second operating position for transillumination of said inner support structure of the wheel.

4,449,227
X-RAY APPARATUS

Teruaki Osako, 708 Chisan Mansion, 3-16, Naka-machi, Utsunomiya-shi, Tochigi-ken, Japan

Filed Sep. 10, 1981, Ser. No. 300,746
Claims priority, application Japan, Sep. 13, 1980, 55-127737
Int. Cl.³ H05G 1/30
U.S. Cl. 378—112 2 Claims



1. An X-ray apparatus comprising:
an alternating current (AC) power source;
a first rectifier circuit connected to the AC power source to cause an alternating current input to be rectified;
a high-tension transformer connected to receive an output of said first rectifier circuit and generate a high-voltage output;
a bridge inverter comprising:
first and second switching elements coupled to said first rectifier circuit and arranged in first and second arms of said inverter, forming a closed circuit together with a primary winding of said high-tension transformer and each adapted to operate as a high-frequency chopper,
a third switching element and first parallel circuit arranged at a third arm of said inverter, said first parallel circuit being connected in series with said third switching element and comprised of a diode and resistor having a resistance value which causes energy accumulated in said primary winding to be dissipated at a steady, gradual pace when the polarity of said bridge inverter is reversed, and
a fourth switching element and second parallel circuit

arranged in a fourth arm of said inverter, said second parallel circuit being connected in series with said fourth switching element and comprised of a diode and resistor having a resistance value which causes energy accumulated in said primary winding to be dissipated at a steady, gradual pace when the polarity of said bridge inverter is reversed, said third and fourth arms being coupled to said first rectifier circuit and forming a closed circuit with said primary winding;

a second rectifier circuit connected to a secondary winding of said high-tension transformer to rectify a high-voltage output from the secondary winding;

an X-ray tube connected to said second rectifier circuit and adapted to receive said high-voltage output rectified by said rectifier circuit;

voltage detection means connected to said X-ray tube to detect said high-voltage which is applied to the X-ray tube; and

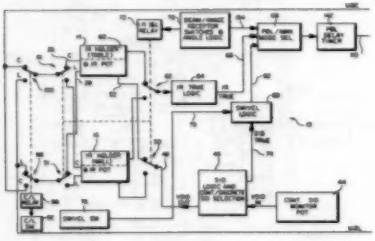
feedback control means, connected between said voltage detection means and said switching elements at the arms of said bridge inverter, for receiving an output detected by said voltage detection means and for controlling each of said switching elements in such a way that said detected output is between predetermined upper and lower limits to cause said high-voltage output applied to said X-ray tube to become a predetermined value.

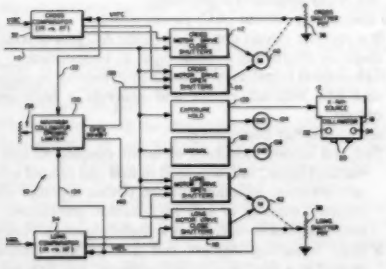
4,449,228

COLLIMATOR LOGIC CONTROL SYSTEM

Robert L. Burbury, Elgin, Ill., assignor to Litton Industrial Products, Inc., Beverly Hills, Calif.

Filed Mar. 30, 1982, Ser. No. 363,702
Int. Cl.³ G03B *41/16*
U.S. Cl. 378—151 **10 Claims**





1. In X-ray apparatus, including a source of X-rays, an image receptor locatable in a holder, a collimator having an adjustable shutter aperture, means for adjusting the shutter aperture in response to detected distances between the X-ray source and the image receptor to form a corresponding X-ray field size at a plane containing the image receptor, and means for positionally swivelling said adjustable shutter aperture angularly from a home position in a plane parallel to the image receptor plane, the improvement comprising means for:

i. disabling operation of said X-ray source during swivelling said adjustable shutter aperture from the home position while said image receptor is located in said holder, and

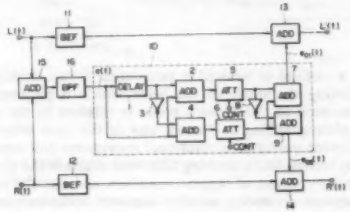
ii. enabling operation of said X-ray source during swivelling said adjustable shutter aperture from the home position while said image receptor is absent from said holder.

4,449,229

SIGNAL PROCESSING CIRCUIT

Shuichi Mori, Saitama, Japan, assignor to Pioneer Electronic Corporation, Saitama, Japan

Filed Oct. 22, 1981, Ser. No. 313,845
Claims priority, application Japan, Oct. 24, 1980, 55-149147; Oct. 24, 1980, 55-149149
Int. Cl.³ H04H *5/00*
U.S. Cl. 381—2 **6 Claims**



3. A stereo reproducing device comprising:

means for subjecting particular band signals of two channel stereo signals to addition to provide an additive signal and extracting a particular band signal from said additive signal;

correlated signal generating means for generating two correlated signals having a desired correlation coefficient by using said extracted particular band signal and a delayed signal obtained by delaying said extracted particular band signal; and

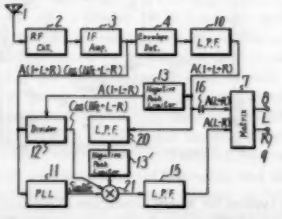
means for adding said two correlated signals respectively to said two channel stereo signals from which said particular band signal is eliminated to output channel stereo reproducing signals.

4,449,230

APPARATUS FOR DEMODULATING AN AM STEREOPHONIC SIGNAL

Satoshi Yokoya, Chofu, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Apr. 1, 1982, Ser. No. 364,620
Claims priority, application Japan, Apr. 7, 1981, 56-52265
Int. Cl.³ H04H *5/00*
U.S. Cl. 381—15 **17 Claims**



1. Apparatus for demodulating an AM stereophonic signal of the type having a carrier amplitude-modulated with the sum of

left and right channel stereophonic signals and the carrier phase-modulated with the difference of said left and right channel stereophonic signals, comprising:

tuning means for producing an intermediate frequency signal in response to said AM stereophonic signal, said intermediate frequency signal having a first amplitude component including amplitude-modulation information corresponding to said sum and also including level information;

detecting means responsive to said intermediate frequency signal for producing a sum signal corresponding to the sum of said left and right channel stereophonic signals and having an amplitude component equal to said first amplitude component;

means responsive to said intermediate frequency signal in combination with said sum signal for producing a difference signal corresponding to the difference between said left and right channel stereophonic signals with said first amplitude component being removed exactly therefrom;

means for producing from said sum signal a level information signal corresponding only to said level information, and having a second amplitude component including only said level information;

means for combining said level information signal with said difference signal to form a level adjusted difference signal having said second amplitude component; and

matrix means for reproducing said left and right channel stereophonic signals in response to said sum signal and said level adjusted difference signal.

4,449,231

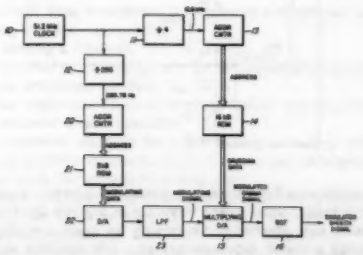
TEST SIGNAL GENERATOR FOR SIMULATED SPEECH

Milan Chytil, Kanata, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Sep. 25, 1981, Ser. No. 305,540

Int. Cl.³ G10L 1/10

U.S. Cl. 381—51 **3 Claims**



1. A test signal generator for pseudo-simulated non-intelligible speech, comprising:

means for generating a random signal having a gaussian amplitude distribution;

means for generating a modulating signal having a power spectrum substantially equal to that of the modulation envelope of speech and a wave shape that results in a gamma amplitude distribution of a gaussian amplitude distributed signal, each cycle of the modulating signal having an identical wave shape and a varying wave period;

means for amplitude modulating the signal having a gaussian amplitude distribution by the modulating signal to generate a modulated gamma signal and

filter means for shaping the modulated signal to approximate the power spectrum of speech.

4,449,232

AUDIBLY ANNOUNCING APPARATUS

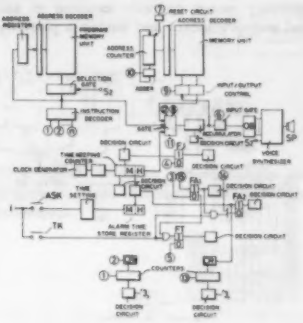
Shintaro Hashimoto, Ikoma; Sigeaki Masuzawa, Nara; Hiroshi Tsuda, Uji; Shinya Sibata, and Masahiro Nakano, both of Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 132,181, Mar. 20, 1982. This application Jul. 26, 1982, Ser. No. 401,556

Claims priority, application Japan, Mar. 22, 1979, 54-33906

Int. Cl.³ G10L 1/00

U.S. Cl. 381—51 **10 Claims**



1. An apparatus capable of generating a plurality of audible sounds indicative, respectively, of a plurality of types of time information, said apparatus comprising:

means for developing a first instruction indicative of a first of said types of time information, the first type of time information being sharp time, said sharp time representing time information which is announced at a certain specific period of time for each hour;

means for developing a second instruction indicative of a second of said types of time information, the second type of time information being alarm time, said alarm time representing time information which is preset into said apparatus and is announced when an actual time equals the preset alarm time;

means for developing a third instruction indicative of a third type of time information, the third type of time information being updated real time information which is announced when a key on said apparatus is actuated, the development of the third instruction signal representing the need to develop an audible sound indicative of the updated real time;

logic means for determining whether the first, second and third instructions are being concurrently developed, said logic means further assigning relative priorities to the third, second and third instructions if the first, second and third instructions are concurrently developed; and

audible sound developing means sequentially generating audible sounds, indicative of the respective types of time information, in a descending order of priority from the highest to the lowest.

4,449,233

SPEECH SYNTHESIS SYSTEM WITH PARAMETER LOOK UP TABLE

George L. Brantingham, Lubbock, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 117,911, Feb. 4, 1980, Pat. No. 4,335,275, which is a continuation of Ser. No. 901,151, Apr. 28, 1978, abandoned. This application Mar. 5, 1982, Ser. No. 355,020

Int. Cl.³ G10L 1/00

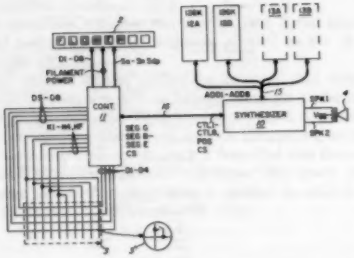
U.S. Cl. 381—53 **12 Claims**

1. A speech synthesis system comprising: first memory means having a plurality of digital speech data stored therein at

a plurality of selected address locations, each speech data having a first predetermined number of bits;

second memory means storing a plurality of digital sets of first address data from which words in a human language may be derived for speech synthesis, each of said sets off first address data including first address data sequentially stored in said second memory means, and each first address data having fewer bits than said first predetermined number of bits of each said speech data stored in said first memory means and corresponding to a selected one address location within said first memory means;

third memory means operably coupled to said first and second memory means and having a plurality of second



address data stored therein, each of said second address data corresponding to a selected one of said plurality of sets of first address data stored in said second memory means; and

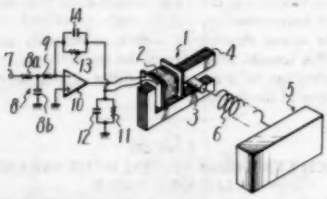
speech synthesis means for converting digital speech data into audible human speech, said speech synthesis means being coupled to said first memory means and at least operably associated with said third memory means for selectively receiving digital speech data from said first memory means in response to accessing of one said selected set of first address data from said second memory means as determined by a said second address data from said third memory means to which said one selected set of first address data corresponds.

4,449,234

REVERBERATION APPARATUS

Takashi Shibata, Kamakura, and Masaaki Nishimura, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 5, 1982, Ser. No. 346,110
Claims priority, application Japan, Feb. 13, 1981, 56-19803
Int. Cl.³ H03H 9/125
U.S. Cl. 381—65 **9 Claims**



1. A reverberation apparatus, comprising:

a signal input terminal to be supplied with an input signal;

an operational amplifier having an inverted input terminal, a non-inverted input terminal and an output terminal, said inverted input terminal being connected to said signal input terminal through an input impedance, said non-inverted input terminal being connected to a reference point, said output terminal being connected to the reference point through an inductance as a load for the circuit and a first impedance;

a second impedance connected between the inverted input terminal of said operational amplifier and the connection point between said inductance and said first impedance, said inductance being connected such that it functions as a drive means of the reverberation apparatus;

said reverberation apparatus having a substantially flat frequency response from zero to a first cut-off frequency, a hump-shaped rising and then falling frequency characteristic from the first cut-off frequency determined by the first impedance to a higher second cut-off frequency determined by the second impedance, and a continued substantial fall-off at higher frequencies above the second cut-off frequency;

said first impedance being chosen to provide said rising frequency response near the first cut-off frequency; and

said second impedance being chosen to provide the falling frequency response near said second cut-off frequency,

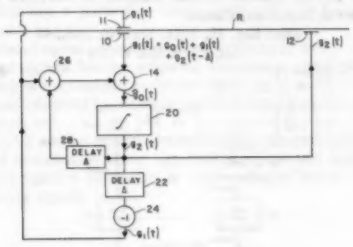
whereby a frequency band of a reverberation sound produced by the apparatus is expanded to a relatively high frequency band and a damping factor remains relatively small, while near the upper cut-off frequency the falling response reduces a level of electromagnetic noise being generated.

4,449,235

ELECTRONIC CANCELLING OF ACOUSTIC TRAVELING WAVES

Charles J. Swigert, Pacific Palisades, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 14, 1982, Ser. No. 398,131
Int. Cl.³ H04R 1/28
U.S. Cl. 381—71 **7 Claims**



1. Apparatus for attenuating a selected acoustic wave mode of an acoustic disturbance traveling in a given direction in a medium, said apparatus comprising an input transducer for detecting acoustic wave energy at a first position along the medium to produce an input electric signal, processing means for performing operations on the input signal in electronic circuits to generate first and second output signals at first and second outputs respectively, output transducer means for converting the two output signals to acoustic wave energy and injecting them into said medium at spatially separate positions, said output transducer means comprising a first transducer located at said first position and a second transducer located at a second position in said given direction from the first position, said first and second outputs being coupled to the first and second transducers, respectively;

wherein said electronic circuits include summing means having an input from said input transducer, integrating means coupled from the summing means to said second output, first delay means in series with a minus-one circuit coupled from said second output to said first output and also to an input of the summing means, and second delay means coupled from the second output to an input of the summing means;

wherein said first and second delay means each provide a given delay time which is equal to the distance between said first and second positions divided by the velocity of the selected acoustic wave mode sensed by the input transducer and injected by said first and second output transducers, the output of the second delay means being a third signal which is equal to the second output signal as a function of time less said given delay;

wherein said summing means comprises means to generate a signal which is equal to the sum of the first output signal and third signal subtracted from said input electrical signal, so that its output is an estimate of said acoustic disturbance, and wherein the integrating means forms the integral over time of said estimate.

4,449,236

ANTI-SIDE TONE TRANSMITTER

Wesley F. Walker, Jr., Ringgold, Ga., assignor to Walker Equipment Corporation, Ringgold, Ga.

Filed Apr. 8, 1982, Ser. No. 366,501
Int. Cl.³ H04R *1/04, 19/01*
U.S. Cl. 381—91 **7 Claims**

1. Anti-side tone transmitter insertable in a telephone handset having a cover, comprising:

a cup having a sidewall;

a cap secured to the cup so as to form an assembly insertable in the telephone handset;

a sound transducer element disposed below said cap within the interior of said assembly;

said transducer element having a casing provided with a single acoustic entrance disposed in a plane substantially flush with the underside of said cap;

said cap having a central opening aligned with and in acoustic communication with said acoustic entrance of said transducer element;

said cap having one or more annular openings spaced from said central opening and disposed inwardly of said cup sidewall and relative to said transducer element casing so that said one or more cap openings are not in acoustic communication with said acoustic entrance of said transducer element.

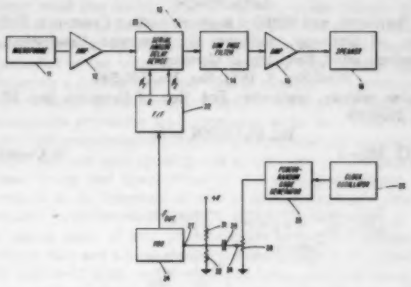
4,449,237

AUDIO FEEDBACK SUPPRESSOR

Elvin D. Stepp, Cincinnati, and Gary L. Claypoole, West Chester, both of Ohio, assignors to Cincinnati Electronics Corporation, Cincinnati, Ohio

Filed Apr. 14, 1982, Ser. No. 368,463
Int. Cl.³ H04R *3/00*
U.S. Cl. 381—93 **26 Claims**

7. In combination, acoustic-electric transducer means for deriving an audio, information bearing electric signal, means responsive to the electric signal for randomly shifting the phase of the electric signal by an amount independent of any characteristic of the information bearing electric signal, and an electric-acoustic transducer responsive to the randomly phase



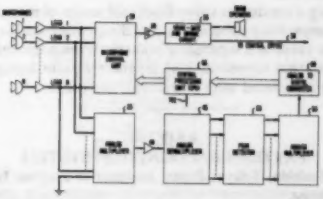
shifted electric signal, whereby the transducer derives an acoustic information signal that is not susceptible to acoustic feedback oscillations.

4,449,238

VOICE-ACTUATED SWITCHING SYSTEM

Byung H. Lee, Hazlet, and John F. Lynch, Jr., Summit, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 25, 1982, Ser. No. 362,034
Int. Cl.³ H04M *3/56*
U.S. Cl. 381—110 **36 Claims**



1. A voice-actuated switching system for selectively connecting speech signals from a plurality of speech circuits to an output line, the system comprising:

a plurality of circuits for generating speech signals;

comparison means automatically operative in response to the signals from the speech circuits for selecting that one of the signals having the greatest magnitude;

means for connecting the selected one of the signals to the output line at an unattenuated level and for connecting unselected signals to the output line at an attenuated level; and

the comparison means determining the signal with the greatest magnitude by comparing the signals both with reference to each other and with reference to a ground potential, the comparing of the signals with the ground potential providing a means for nulling any extraneous signals being induced in the speech signals in determining the selected one of the speech signals.

4,449,239

METHOD AND CIRCUIT FOR SEGMENTATION OF CHARACTERS FROM A SERIALLY-READ CHARACTER SEQUENCE

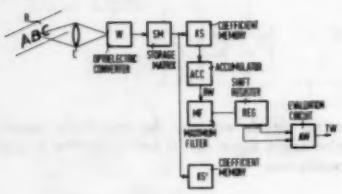
Lutz Bernhardt, and Wilfried Kochert, both of Constance, Fed. Rep. of Germany, assignors to Computer Gesellschaft, Konstanz mbH, Fed. Rep. of Germany

Filed Sep. 9, 1981, Ser. No. 300,500

Claims priority, application Fed. Rep. of Germany, Sep. 10, 1980, 3034099

Int. Cl.³ G06K 9/34

U.S. Cl. 382—9 10 Claims



1. A method for segmenting characters in a printed character sequence comprising the steps of:

serially scanning said sequence in a column-by-column format for converting said characters into digital data;

intermediately storing portions of said digital data representing equal selected windows of said sequence as respective image pattern matrices each offset by one column width with respect to each other and each having a center column;

calculating a plurality of coefficients for each image pattern matrix according to selected characteristics of said image pattern matrix relating to the presence or absence of print in the portion of said sequence represented by said image pattern matrix;

summing the coefficients for each image pattern matrix for obtaining a series of margin values which are respectively associated with the center column for each image pattern matrix; and

selecting a maximum value from said series of margin values as a separating point value, and designating siad separating point value as a separating point between adjacent characters in said sequence, said separating point being specifically associated with one of said columns.

4,449,240

PATTERN RECOGNITION SYSTEM

Hajime Yoshida, Tokyo, Japan, assignor to Hajime Industries Ltd., Japan

Continuation-in-part of Ser. No. 94,112, Nov. 14, 1979, abandoned. This application Aug. 12, 1981, Ser. No. 292,267

Claims priority, application Japan, Nov. 17, 1978, 53-141761

Int. Cl.³ G06K 9/62

U.S. Cl. 382—15 4 Claims

1. A method of pattern recognition comprising:

producing an electrical signal related to a standard object of a type exhibiting a pattern to be recognized;

storing characteristics of said electrical signal in a pattern recognition system to produce a stored standard signal;

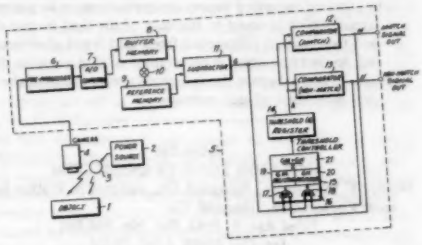
setting a predetermined value A for determining whether or not an electrical signal contains characteristics sufficiently close to said stored standard signal to be judged to be the same as said standard object;

producing a second electrical signal related to an object being inspected;

determining a difference between said second electrical signal and said stored standard signal;

outputting a match electrical signal indicating that said second electrical signal represents an object exhibiting said pattern if said difference differs from said predetermined value A by less than a threshold value;

outputting a non-match electrical signal indicating that said second electrical signal does not represent an object exhibiting said pattern if said difference differs from said predetermined value A by more than said threshold value;



increasing and decreasing a value of said predetermined value A with time in accordance with said difference; and

continuing the above steps of producing, determining and outputting for each object being inspected whereby said threshold A is varied according to changing external conditions.

4,449,241

TONER CLEANING APPARATUS

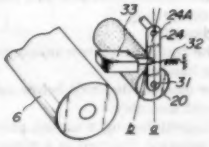
Shigeru Nakayama, Hachioji, Japan, assignor to Olympus Optical Company Limited, Tokyo, Japan

Filed May 27, 1982, Ser. No. 382,608

Claims priority, application Japan, May 30, 1981, 56-78310[U]

Int. Cl.³ G03G 21/00

U.S. Cl. 118—699 12 Claims



1. A toner cleaning apparatus for use in an electrophotographic copying machine in which a photosensitive drum is rotated during a copying operation and continues to rotate after the end of the copying operation for a predetermined number of revolutions to remove residual toners remaining on said drum after transferring onto a record paper a toner image obtained by developing with toners an electrostatic latent image formed on the photosensitive drum within a pictorial area, said apparatus comprising:

cleaning means arranged movably between a first position in which the cleaning means is separated from the photosensitive drum and a second position in which the cleaning means is brought into contact with the photosensitive drum to remove the residual toners;

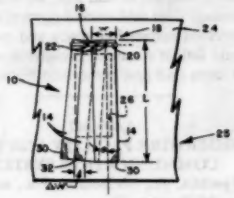
driving means for moving the cleaning means between said first and second positions; and

controlling means for controlling said driving means in such a manner that the cleaning means is separated from said photosensitive drum as a time after the end of the copying operation, but before the rotation of the photosensitive drum is stopped.

4,449,242
FLEXIBLE, RESILIENT ANTI-CONTAMINATION BAFFLE

James G. Sliney, Jr., La Canada, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 31, 1982, Ser. No. 413,296
Int. Cl.³ B65D 51/16; F16K 15/14
U.S. Cl. 383—103 7 Claims



1. A package adapted to house a component therein for use in space-related applications comprising:

a surface on said package, said surface having an opening therein;

sealing means fixedly secured at one end thereof to said surface adjacent said opening for covering said opening when pressures on opposite sides of said opening are substantially equal and uncovering said opening by moving in a predetermined direction when said pressure on opposite sides of said opening are unequal or when an object is forced against said sealing means, said sealing means being formed of a plurality of overlapping sheets of material, said sheets of material being extremely thin and both flexible and resilient, and said sheets of material being angularly displaced on one another in a fanned fashion in said overlapping position; and

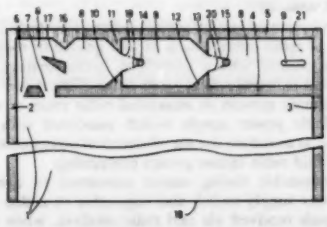
means operably associated with said sheets of material for providing loose adherence between said sheets of material while said sheets are covering said opening and for allowing said sheets to be released from one another while uncovering said opening;

whereby contaminants are prevented from passsing through said opening when said sheets are covering said opening, and molecules can pass in said predetermined direction when said sheets are uncovering said opening.

4,449,243
VACUUM PACKAGE BAG

Charles Platel, Marck, France, assignor to Cafes Collet, Calais, France

Filed Sep. 7, 1982, Ser. No. 415,739
Claims priority, application France, Sep. 10, 1981, 81 17160
Int. Cl.³ B65D 33/01
U.S. Cl. 383—103 7 Claims

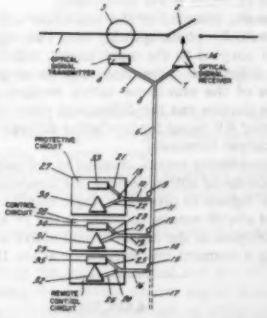


1. A vacuum package bag comprising a pair of opposite walls having a gas exhaust valve extending along one end of said bag, said gas exhaust valve being formed by inner and outer parallel transverse weld lines joining said opposite walls and defining a channel at least 5 mm wide therebetween, said inner weld line having at least one gap in the vicinity of one side of said bag defining a passageway between the interior of said bag and an upstream end of said channel, an opening being provided in the vicinity of the opposite side of said bag for bringing a downstream end of said channel into communication with the surrounding atmosphere, the improvement which comprises providing said transverse weld lines with at least one first protuberance disposed between said gap in said inner weld line and said opening and at least one second protuberance facing and symmetrical to said first protuberance with respect to the longitudinal axis of said channel, said first and second protuberances defining a narrowed section in said channel, each of said protuberances having an oblique upstream side and a downstream side substantially perpendicular to said weld lines, and a spot weld being arranged along said longitudinal axis of said channel to attach the opposite walls of said bag in the vicinity of the point of intersection of the continuation of said oblique sides of said first and second protuberances.

4,449,244
DATA TRANSMISSION NETWORK EMPLOYING OPTICAL WAVE GUIDE

Jügen Kopainsky, Fislisbach, Switzerland, assignor to BBC Brown, Boveri & Company Limited, Switzerland

Filed Mar. 3, 1982, Ser. No. 354,360
Claims priority, application Switzerland, Mar. 5, 1981, 1469/81
Int. Cl.³ H04B 9/00
U.S. Cl. 455—603 6 Claims



1. A data transmission network for transmitting control and operating signals between electrical apparatus and remotely disposed control means for said electrical apparatus; said network including measurement transducer means and actuator means connected to said apparatus for producing, respectively, electrical output signals representative of an operating parameter of said apparatus and operating signals for modifying the operation of said apparatus, first and second optical signal transmitters connected to said measurement transducer means and said control means respectively for transmitting signals related respectively to said operating parameter and for modifying the operation of said apparatus; first and second optical receivers connected to said actuator means and control means respectively, and optical wave guide means having a main length and first and second ends each having first and second branches extending from first and second junctions respectively; the ends of said first and second branches of said first junction of said wave guide being coupled to said first optical signal transmitter and said first optical receiver respectively; the ends of said first and second branches of said second junction of said wave guide being coupled respectively to a third

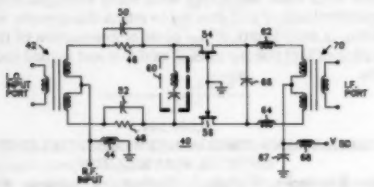
branch which extends to supplemental control locations and to a third junction; said third junction having fourth and fifth branches connected to said second optical signal transmitter and said second optical receiver respectively; said branched ends of said wave guide permitting transmission of optical signals between either of said second or third junction with said first junction and preventing communication between branches extending from a common junction.

4,449,245

HIGH GAIN BALANCED MIXER

Duane C. Rabe, Rolling Meadows, Ill., assignor to Motorola Inc., Schaumburg, Ill.

Filed Mar. 22, 1982, Ser. No. 360,511
Int. Cl.³ H04B 1/26
U.S. Cl. 455—319 **5 Claims**



1. An active balanced mixer for producing a predetermined IF signal, including at least two non-linear active devices with each non-linear active device having an input terminal, an output terminal and a control terminal coupled to the control terminal of at least one other of the active non-linear devices, said active balanced mixer comprising:

input means, coupled to the non-linear active devices, for differentially phase splitting into two signals a first RF signal coupled to the input means, and for coupling the two differential phase split signals respectively to the inputs of the non-linear active devices, said non-linear active devices mix the differential phase split signals with a second RF signal for producing differential IF signals at said output terminals;

output combining means, coupled to the output terminals of the non-linear active devices, for combining the differential IF signals to provide a single ended output;

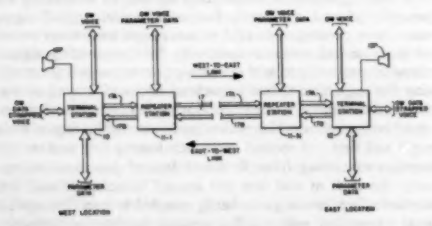
resonant circuit means, resonant at the IF signal frequency and coupled to the inputs of said active devices, for providing a resonant low impedance at the IF frequency.

4,449,246

ORDERWIRE COMMUNICATION SYSTEM

Norman C. Seiler, West Melbourne, Fla.; Thomas J. Nixon, Gaithersburg, Md., and George A. Waschka, Jr., Melbourne, Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed May 2, 1980, Ser. No. 146,164
Int. Cl.³ H04B 7/20
U.S. Cl. 455—9 **78 Claims**



1. For use in a communication system wherein information signals are to be conveyed among a plurality of stations distributed along a shared communication link, said link having a first portion for carrying messages in a first direction along said link and a second portion for carrying messages in a second direction along said link, a station transceiver for receiving messages transmitted to it and transmitting response messages in reply thereto comprising:

first means, coupled to said link, for receiving a first incoming message transmitted over said first portion of said link at a first prescribed carrier frequency; and

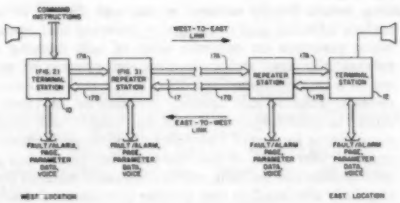
second means, coupled to said link, for transmitting an outgoing message over said second portion of said link at said first prescribed carrier frequency and over said first portion of said link at a second prescribed carrier frequency different from said first prescribed frequency.

4,449,247

LOCAL ORDERWIRE FACILITY FOR FIBER OPTIC COMMUNICATION SYSTEM

George A. Waschka, Jr., Melbourne, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Jul. 30, 1980, Ser. No. 173,876
Int. Cl.³ H04B 7/20
U.S. Cl. 455—9 **20 Claims**



1. In a data scrambler in which incoming data is subjected to a prescribed scrambling code so as to produce an output scrambled data sequence, an arrangement for preventing said scrambler from locking into a continuous state comprising:

first means, coupled to said scrambler, for comparing selected contents of said scrambler with incoming data to be scrambled; and

second means, coupled to said first means and disposed in the data flow path between said incoming data and said scrambler, for altering the data to be coupled into said scrambler, in response to said first means detecting a potential lock condition.

4,449,248

BATTERY SAVING RADIO CIRCUIT AND SYSTEM

Samuel A. Leslie, and Robert C. Schwartz, both of Forest, Va., assignors to General Electric Company, Lynchburg, Va.

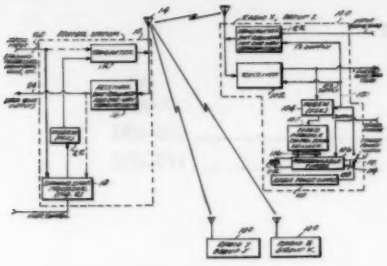
Filed Feb. 1, 1982, Ser. No. 344,730
Int. Cl.³ H04B 7/00, 1/16
U.S. Cl. 455—38 **22 Claims**

1. An improved battery saving radio system including plural groups of radio circuits each of said groups of radio circuits being associated with a respective, corresponding radio receiver and each said circuit group being of the type which only intermittently powers its associated radio receiver through a controllable power supply switch associated with such receiver so as to reduce the use of electrical power consumption, each of said radio circuit groups comprising:

programmable timing means connected to control said power supply switch and responsive to coded electrical signals received via said radio receiver, when powered, for changing an "off" time interval which occurs between two successive "on" intervals before the radio receiver is next supplied with power in an "on" interval to enable

receipt of further radio signals wherein each respectives receiver and its associated radio circuits in a given group include a decoder for responding to a particular coded address to the exclusion of other addresses meant for other receivers in order to allow the respective programmable timing means to change the "off" time intervals in accordance with transmitted time-off signals, and

said system further including a radio control station comprising:



control radio transmitting means for transmitting electromagnetic r.f. signals having coded address and time-off signals modulated thereon; and

command processing means for generating said coded address and time-off signals during real time intervals synchronized with the "on" time intervals when power is supplied to each radio receiver respectively associated with a predetermined group of radio circuits via its respective power supply switch.

4,449,249

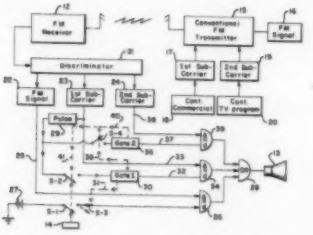
TELEVISON PROGRAMMING INFORMATION SYSTEM

Robert T. Price, 22515 Hartland St., Canoga Park, Calif. 91307

Filed Sep. 27, 1982, Ser. No. 423,708

Int. Cl.³ H04B *1/00, 1/70*

U.S. Cl. 455—45 **4 Claims**



3. A radio receiving device for aurally reproducing up to date television programming information together with a commercial to a viewer of television, independent of the viewer's television set, including, in combination:

(a) aural reproduction means

(b) a radio signal receiver discriminating means for deriving synchronizing pulses along with said commercial from a first broadcast sub-carrier signal and for deriving up to date television program information from a second broadcast sub-carrier signal; and

(c) control means coupled between said discriminating means and said aural reproduction means responsive to said synchronizing pulses for assuring that whenever said radio receiver is operated by a viewer for listening to program information, said commercial is coupled to said aural reproduction means before said television program information.

4,449,250

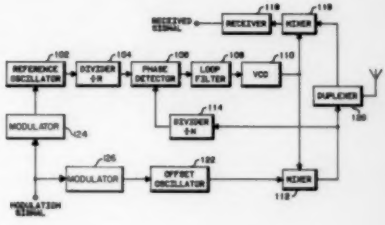
RADIO-FREQUENCY SYNTHESIZER FOR DUPLEX RADIOS

Christopher N. Kurby, Elmhurst, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 21, 1981, Ser. No. 332,432

Int. Cl.³ H04B *1/40;* **H04L** *7/18;* **H03C** *3/00*

U.S. Cl. 455—76 **12 Claims**



5. Circuitry for synthesizing the frequency of a transmit carrier signal of a duplex radio transceiver, said frequency synthesizing circuitry comprising:

means for generating a reference signal having a predetermined frequency;

means for comparing the phase of the reference signal to the phase of a feedback signal and generating an error signal;

means for filtering the error signal;

voltage controlled oscillator (VCO) means for generating an injection signal having a frequency varying with the filtered error signal;

means for generating an offset signal having a predetermined frequency;

means for mixing the injection signal and the offset signal and generating the transmit carrier signal having a frequency that is substantially the sum or difference of the frequency of the injection signal and the frequency of the offset signal;

means for frequency dividing the transmit carrier signal by a pre-selected number to generate the feedback signal;

a signal source for providing an information signal;

means for modulating the frequency of the reference signal with the information signal; and

means for modulating the frequency of the offset signal with the information signal, whereby the modulation of the feedback signal is substantially cancelled by the modulation of the reference signal.

DESIGN PATENTS

GRANTED MAY 15, 1984

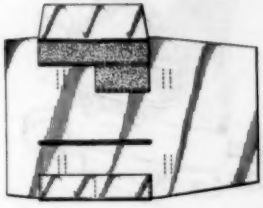
ERRATA

For CLASS	See PATENT NO.
D03–012	273,815
D03–038	273,816

273,814
CANINE BISCUIT
Gary Gellman, Pomona, N.Y.; George A. Erfurt, Lawrenceville, and James E. Roe, Wayne, both of N.J., assignors to Nabisco Brands, Inc., Parsippany, N.J.
Filed Jan. 28, 1982, Ser. No. 343,633
Term of patent 14 years
U.S. Cl. D1—27

273,815
UMBRELLA HANDLE
James H. Allen, Covington, Ky., assignor to 'Totes', Incorporated, Loveland, Ohio
Filed Nov. 18, 1981, Ser. No. 322,525
Term of patent 14 years
U.S. Cl. D3—12

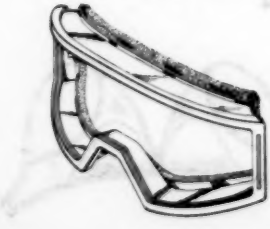
273,816
SNELL HOOK HOLDER
Nicholas P. Cerasari, 1103 Spruce Ave., Wilmington, Del. 19805
Filed Apr. 1, 1982, Ser. No. 339,856
Term of patent 14 years
U.S. Cl. D3—38



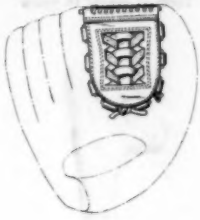
273,817
BRASSIERE
Phyllis Shonk, Glen Rock, N.J., assignor to International Playtex, Inc., Stamford, Conn.
Filed Feb. 8, 1982, Ser. No. 346,800
Term of patent 14 years
U.S. Cl. D2—24

273,818
SAFETY VEST FOR RUNNER
Caroline M. Spencer, Los Angeles, Calif., assignor to Mattel, Inc., Hawthorne, Calif.
Filed Jan. 7, 1982, Ser. No. 337,652
Term of patent 14 years
U.S. Cl. D2—27

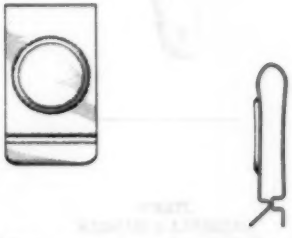
273,819
GOGGLE FRAME
James E. Yehl, 3160 Nebo Rd., Boulder, Colo. 80302
Filed Nov. 2, 1981, Ser. No. 317,085
Term of patent 14 years
U.S. Cl. D2—234



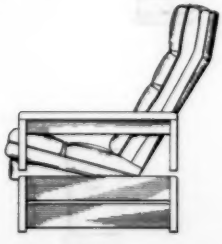
273,820
BACKSTOP FOR A BASEBALL OR SOFTBALL GLOVE
Saul Neidell, Fair Lawn, N.J., assignor to MacGregor Athletic Products, a division of The Equilink Corporation, East Rutherford, N.J.
Filed Feb. 26, 1982, Ser. No. 352,540
Term of patent 14 years
U.S. Cl. D2—361



273,821
BELT CLIP FOR A HOLSTER
John E. Bianchi, Fallbrook, Calif., assignor to Bianchi International, Temecula, Calif.
Filed Dec. 4, 1981, Ser. No. 327,416
Term of patent 14 years
U.S. Cl. D2—400

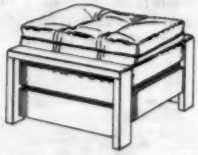


273,822
CHAIR
Charles Desnoyers, St-Pie de Bagot, Canada, assignor to Dutailier Inc., St-Pie de Bagot, Canada
Filed Dec. 28, 1981, Ser. No. 335,270
Term of patent 14 years
U.S. Cl. D6—50



273,823
CHAIR
Emilio Ambasz, New York, N.Y., and Giancarlo Piretti, Bologna, Italy, assignors to Center for Design Research and Development NV, Curacao, Netherlands Antilles
Division of Ser. No. 250,606, Apr. 3, 1981. This application Feb. 14, 1983, Ser. No. 466,601
Term of patent 14 years
U.S. Cl. D6—31

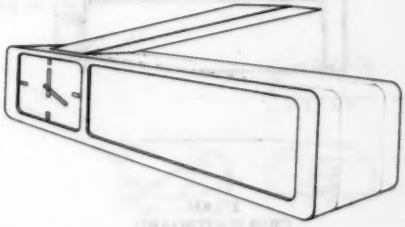
273,824
OTTOMAN
Charles Desnoyers, St-Pie de Bagot, Canada, assignor to Dutailier Inc., St-Pie de Bagot, Canada
Filed Dec. 28, 1981, Ser. No. 335,269
Term of patent 14 years
U.S. Cl. D6—36



273,825
CYCLE SEAT
Charles Persons, Huron, Ohio, assignor to Persons-Majestic Manufacturing Company, Worchester, Mass.
Filed Mar. 2, 1981, Ser. No. 239,424
Term of patent 14 years
U.S. Cl. D6—48.1

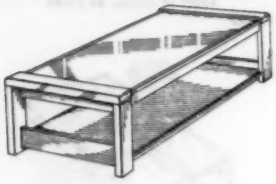
273,826
COMBINED DISPENSING RACK FOR ROLLS OF INTERCONNECTED BAGS AND BAG CLOSURE HOLDER
Lyman V. Anderson, 2517 W. 95th St., Bloomington, Minn. 55431; Carolyn Smith, Minneapolis, Minn.; John B. Grant, St. Croix, Minn., and M. A. Roth, Jr., St. Paul., Minn., assignors to Lyman V. Anderson, Bloomington, Minn.
Filed Jun. 14, 1982, Ser. No. 388,074
Term of patent 14 years
U.S. Cl. D6—130

273,827
COMBINED HANGING DISPLAY CASE AND CLOCK
James B. Bowers, Tulsa, Okla., assignor to H and H Promotions, Inc., Tulsa, Okla.
Filed Dec. 31, 1981, Ser. No. 336,083
Term of patent 14 years
U.S. Cl. D6—172



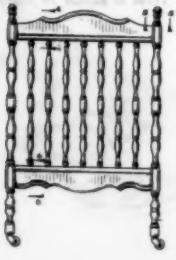
273,828
COMBINATION EASEL AND TABLE
Margo J. Oshry, 50 Deer Park Ave., San Rafael, Calif. 94901
Filed Mar. 13, 1981, Ser. No. 243,467
Term of patent 14 years
U.S. Cl. D6—178

273,829
TABLE
Charles Desnoyers, St-Pie de Bagot, Canada, assignor to Dutalier Inc., St-Pie de Bagot, Canada
Filed Dec. 28, 1981, Ser. No. 335,271
Term of patent 14 years
U.S. Cl. D6—179

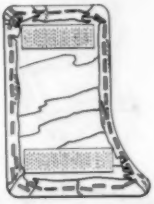


273,830
DATA PROCESSING STORAGE UNIT
Francis J. Jedziniak, 2352 W. 227th St., Torrance, Calif. 90501
Filed Nov. 27, 1981, Ser. No. 325,331
Term of patent 14 years
U.S. Cl. D6—181

273,831
CRIB FOOTBOARD
Merlin A. Brunner, New London; Harvey J. Draheim, Weyauwega, and Michael J. Schaffer, New London, all of Wis., assignors to Simmons Universal Corporation, New York, N.Y.
Filed Nov. 9, 1981, Ser. No. 319,504
Term of patent 14 years
U.S. Cl. D6—191



273,832
TRAY ACCESSORY ATTACHMENT
Roger Chapman, 5683 Vineyard Rd., Oregon, Wis. 53575
Filed Nov. 27, 1981, Ser. No. 325,228
Term of patent 14 years
U.S. Cl. D6—199

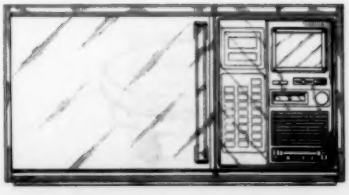


273,833
INSULATED POUCH FOR BEER KEGS
William A. B. Taylor, 3003 Sunset Dr., Evans, Colo. 80620, and James Palatine, 8 Grove St. #2, Boston, Mass. 02114
Filed Jan. 18, 1982, Ser. No. 340,496
Term of patent 14 years
U.S. Cl. D7—77

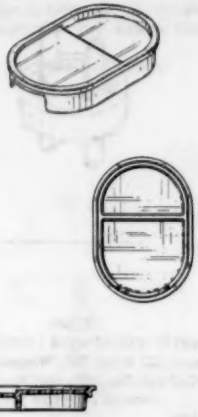
273,834
MICROWAVE OVEN
Kenichi Haruguchi; Takao Miyake; Masayoshi Kawaishi; Masafumi Numano, and Kazuo Tsujimoto, all of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed Jan. 22, 1982, Ser. No. 341,661
Claims priority, application Japan, Jul. 23, 1981, 56-32864
Term of patent 14 years
U.S. Cl. D7—351

273,835
MICROWAVE OVEN
Kenichi Haruguchi; Takao Miyake; Masayoshi Kawaishi; Masafumi Numano, and Kazuo Tsujimoto, all of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed Jan. 22, 1982, Ser. No. 341,663
Claims priority, application Japan, Jul. 23, 1981, 56-32867
Term of patent 14 years
U.S. Cl. D7—351

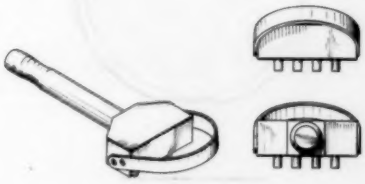
273,836
COMBINED MICROWAVE OVEN, TELEVISION RECEIVER, AND TAPE PLAYER
Yukiie Ohyama; Makoto Nakagawaji, and Hiroshi Endo, all of Shiga, Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan
Filed Nov. 29, 1982, Ser. No. 445,055
Claims priority, application Japan, May 31, 1982, 57-24096
Term of patent 14 years
U.S. Cl. D7—351



273,837
CONTAINER COVER OR THE LIKE
Pieter K. J. De Coster, Aalst, Belgium, assignor to Dart Industries Inc., Northbrook, Ill.
Filed Dec. 24, 1981, Ser. No. 334,285
Term of patent 14 years
U.S. Cl. D7—391

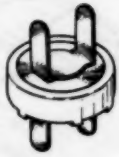


273,838
GARDEN TOOL
Fred T. Buffington, 551E - 975S, Fairmount, Ind. 46928
Filed Apr. 2, 1982, Ser. No. 364,809
Term of patent 14 years
U.S. Cl. D8—7



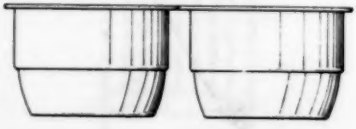
273,839
TILE REMOVING TOOL
Eugene Anderson, 614 - 32nd St., Oakland, Calif. 94609
Filed Feb. 8, 1982, Ser. No. 346,523
Term of patent 14 years
U.S. Cl. D8—89

273,840
MAGNETIC FASTENER
Tamao Morita, 41-1, 6-chome, Arakawa-ku, Tokyo, Japan
Filed Apr. 27, 1981, Ser. No. 258,039
Term of patent 14 years
U.S. Cl. D8—382



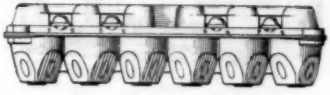
273,841
PLASTIC STRAP FOR LOBSTER POT
Thomas R. Chace, 227 River Rd., Westport, Mass. 02790
Filed Jul. 26, 1982, Ser. No. 401,499
Term of patent 14 years
U.S. Cl. D8—394

273,842
COMPARTMENTED PACKAGING CONTAINER FOR FOOD OR THE LIKE
Bernard Jeannin, Verrieres, France, assignor to Compagnie Gervais Danone, Levallois-Perret, France
Filed May 8, 1981, Ser. No. 233,080
Claims priority, application France, Jan. 23, 1981, 810222
Term of patent 14 years
U.S. Cl. D9—341



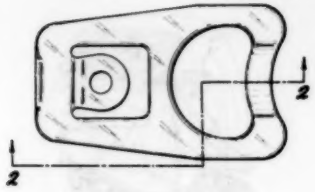
273,843
CONTAINER BODY
Kenard E. Urion, Woodbury, N.J., assignor to Scott Paper Company, Philadelphia, Pa.
Filed Feb. 6, 1981, Ser. No. 232,279
Term of patent 14 years
U.S. Cl. D9—351

273,844
EGG CARTON
Kenneth D. Bixler, Huntington, N.Y.; Henry A. Lord, Cape Elizabeth, Me., and Richard F. Reifers, New Canaan, Conn., assignors to Diamond International Corporation, New York, N.Y.
Filed Sep. 29, 1981, Ser. No. 306,978
Term of patent 14 years
U.S. Cl. D9—345

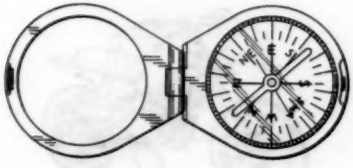


273,845
CAP FOR A BOTTLE
John J. Dobias, 1212 Sumach Dr., Windsor, Ontario, Canada (N8S 2S4)
Filed Mar. 2, 1981, Ser. No. 239,434
Term of patent 14 years
U.S. Cl. D9—438

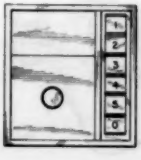
273,846
PULL TAB FOR A CONTAINER END
Ermal C. Fraze, 618 Greenmount Blvd., Dayton, Ohio 45419
Division of Ser. No. 91,073, Nov. 5, 1979. This application Dec. 31, 1981, Ser. No. 336,092
Term of patent 14 years
U.S. Cl. D9—438



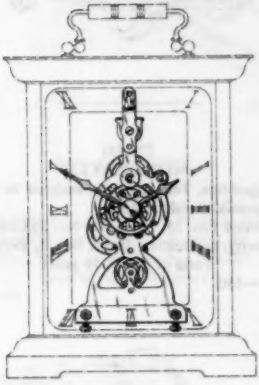
273,847
COMPASS
Toshikazu Yusa, No. 8-15 Ohyamacho, Shibuya-Ku, Tokyo, Japan
Filed Mar. 18, 1982, Ser. No. 359,273
Term of patent 14 years
U.S. Cl. D10—68

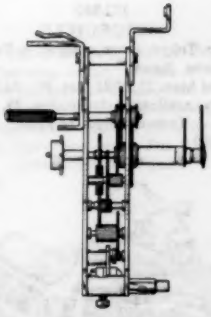


273,848
COMBINED AUDIBLE SIGNAL AND COMMUNICATOR
Justin J. Monahan, 614 N. Kings Way Rd. #39, Seffner, Fla. 33584
Filed Apr. 24, 1981, Ser. No. 257,193
Term of patent 14 years
U.S. Cl. D10—106



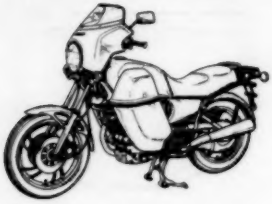
273,849
ELECTRIC CLOCK MOVEMENT
Jürgen Berges; Wolfgang Fehrenbacher, both of St. Georgen; Günter Neininger, VS-Villingen Schwenningen, and Erich Scheer, St. Georgen, all of Fed. Rep. of Germany, assignors to Kieninger & Obergfell, St. Georgen im Schwarzwald, Fed. Rep. of Germany
Filed Apr. 2, 1982, Ser. No. 364,657
Claims priority, application Fed. Rep. of Germany, Oct. 6, 1981, 8129149[U]
Term of patent 14 years
U.S. Cl. D10—129



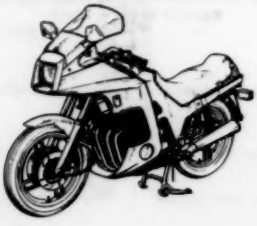


273,850
MOTORCAR
Hiroshi Zaima, Niiza, and Yusuke Saito, Asaka, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 12, 1981, Ser. No. 320,688
Claims priority, application Japan, May 13, 1981, 56-20062
Term of patent 14 years
U.S. Cl. D12—91

273,851
MOTORCYCLE
Hidehiko Nagashima, Tokyo, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Japan
Filed Feb. 25, 1982, Ser. No. 352,210
Claims priority, application Japan, Sep. 1, 1981, 56-38715
Term of patent 14 years
U.S. Cl. D12—110



273,852
MOTORCYCLE
Atsushi Ishiyama, Tokyo, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Japan
Filed Mar. 25, 1982, Ser. No. 361,773
Claims priority, application Japan, Sep. 29, 1981, 56-43436
Term of patent 14 years
U.S. Cl. D12—110

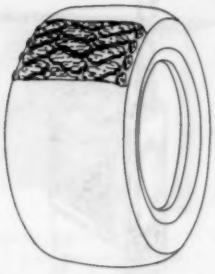


273,853
MOTORCYCLE
Tsunemi Kawashima, Tokyo; Toshiharu Shimizu, Saitama; Kiyoshi Hashimoto, and Seiji Higashihara, both of Shizuoka, all of Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Japan
Filed May 5, 1982, Ser. No. 375,041
Claims priority, application Japan, Nov. 12, 1981, 56-50.363
Term of patent 14 years
U.S. Cl. D12—110

273,854
MOTORCYCLE
Atsushi Ishiyama, Tokyo, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Japan
Filed May 5, 1982, Ser. No. 375,050
Claims priority, application Japan, Nov. 12, 1981, 56-50.362
Term of patent 14 years
U.S. Cl. D12—110

273,855
ATHLETIC WHEEL CHAIR FRAME
Carl L. Leach, 4175 Baldwin, Pontiac, Mich. 48056
Filed Jun. 8, 1981, Ser. No. 271,544
Term of patent 14 years
U.S. Cl. D12—131

273,856
TIRE
Hans J. Vögler, Herzogenrath, Fed. Rep. of Germany, assignor to Uniroyal Englebert Reifen GmbH, Aachen, Fed. Rep. of Germany
Filed Jan. 27, 1982, Ser. No. 343,251
Claims priority, application Fed. Rep. of Germany, Jul. 30, 1981, MR3277
Term of patent 14 years
U.S. Cl. D12—146

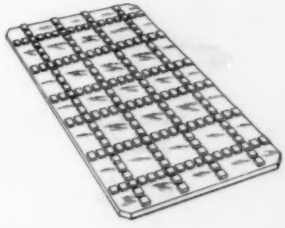


273,857
DRIVING SIDE MIRROR FOR MOTOR VEHICLE
Mamoru Matsui, Tokyo, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 23, 1981, Ser. No. 323,717
Claims priority, application Japan, May 25, 1981, 56-22493
Term of patent 14 years
U.S. Cl. D12—187

273,858
PROPELLER SPINNER
Edward J. Swearingen, Jr., San Antonio, Tex., assignor to Fairchild Swearingen Corporation, San Antonio, Tex.
Filed Oct. 2, 1981, Ser. No. 307,959
Term of patent 14 years
U.S. Cl. D12—214

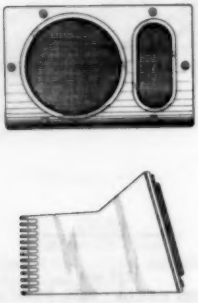
273,859
MULTI PIN TERMINAL ELECTRICAL CONNECTOR RECEPTACLE
Albert Casciotti, Hershey, and Robert D. Hollyday, Elizabethtown, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.
Filed May 14, 1982, Ser. No. 378,035
Term of patent 14 years
U.S. Cl. D13—24

273,860
HOLDING PALLET FOR PC BOARDS
William S. Bolt, 1010 Cuyahoga Dr., Bartlett, Ill. 60103
Filed Sep. 8, 1981, Ser. No. 299,857
Term of patent 14 years
U.S. Cl. D13—99

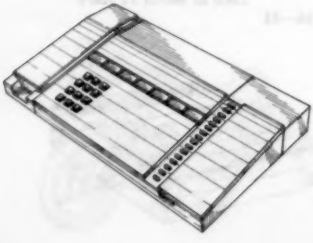


273,861
VIDEO TAPE MAGAZINE
Kimiyoshi Ban, Saitama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Division of Ser. No. 161,306, Jun. 24, 1980, Pat. No. Des. 264,966. This application Aug. 28, 1981, Ser. No. 297,269
Claims priority, application Japan, Jun. 9, 1980, 55-22674
Term of patent 14 years
U.S. Cl. D14—11

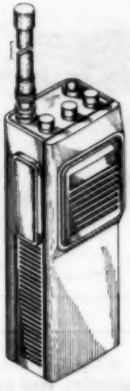
273,862
LOUDSPEAKER
Dennis C. Ward, 58 Ash Acre La., Worthing, Sussex, England (BN1 1EJ)
Filed Nov. 24, 1981, Ser. No. 324,531
Claims priority, application United Kingdom, Oct. 6, 1981, 81/1002845
Term of patent 14 years
U.S. Cl. D14—34



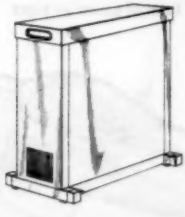
273,863
TELEPHONE
John W. Goodin, Long Beach, and Charlie A. Patterson, Costa Mesa, both of Calif., assignors to Dart Industries Inc., Northbrook, Ill.
Filed Jul. 25, 1983, Ser. No. 517,168
Term of patent 14 years
U.S. Cl. D14—53



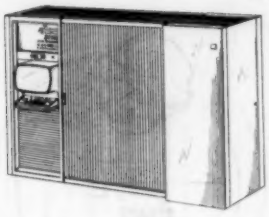
273,864
PORTABLE TWO-WAY RADIO OR SIMILAR ARTICLE
John A. Eckmann, Pompano Beach, Fla., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Dec. 3, 1981, Ser. No. 327,304
Term of patent 14 years
U.S. Cl. D14—68



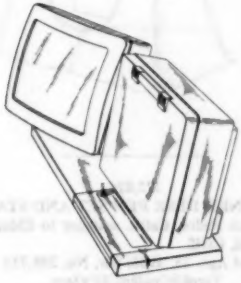
273,865
BASE UNIT FOR A DATA TERMINAL
Terence T. Caven, Beeston, and Ronald Ellis, Carlton, both of England, assignors to Plessey Overseas Limited, Ilford, England
Filed Sep. 14, 1981, Ser. No. 301,967
Claims priority, application United Kingdom, Mar. 14, 1981, 999434
Term of patent 14 years
U.S. Cl. D14—102



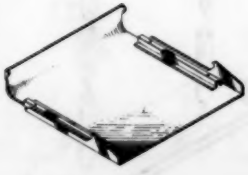
273,866
DATA PROCESSING SYSTEM
James J. LaDue, Wappingers Fall, N.Y., and Clifford I. Shelkofsky, Charlotte, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.
Division of Ser. No. 178,263, Aug. 15, 1980, Pat. No. 267,490. This application Sep. 24, 1982, Ser. No. 423,483
Term of patent 14 years
U.S. Cl. D14—102



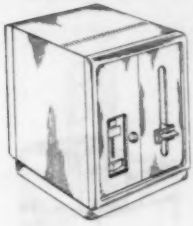
273,867
COMPUTER OR SIMILAR ARTICLE
Matthew H. L. Sanders, Cupertino; Scott H. Stillinger, Los Gatos, and Michael J. Nuttall, Palo Alto, all of Calif., assignors to Convergent Technologies, Inc., Santa Clara, Calif.
Filed Nov. 18, 1981, Ser. No. 322,593
Term of patent 14 years
U.S. Cl. D14—106



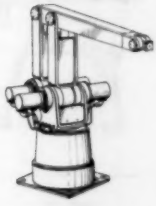
273,868
PAPER GUIDE FOR PRINTER TERMINAL
Jaime E. Dorman, Holladay, and Billy M. Jensen, Sandy, both of Utah, assignors to Micro Peripherals, Inc., Salt Lake City, Utah
Filed Oct. 5, 1981, Ser. No. 308,459
Term of patent 14 years
U.S. Cl. D14—114



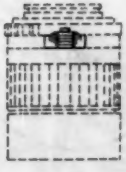
273,869
INTERACTIVE TERMINAL CONTROLLER
Donald F. Lahey, Saratoga, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Sep. 14, 1981, Ser. No. 300,779
Term of patent 14 years
U.S. Cl. D14—107



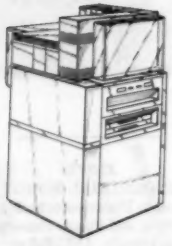
273,870
INDUSTRIAL ROBOT
Michinaga Kono; Yoshio Matsumoto, both of Yokohama; Hirosuke Katsumi, Tokyo, and Fumio Fukuchi, Funabashi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Sep. 30, 1982, Ser. No. 428,975
Claims priority, application Japan, Oct. 5, 1979, 54-41673; Feb. 12, 1980, 55-4391; Mar. 26, 1980, 55-11412
Term of patent 14 years
U.S. Cl. D15—199



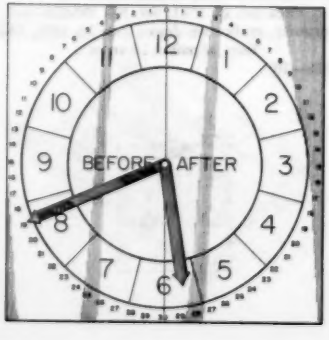
273,871
LOCKING DEVICE FOR A PHOTOGRAPHIC INTERCHANGEABLE LENS
Masaharu Shigoku, Yao; Ken Nagasaka, Sakai, and Masakazu Nakanishi, Hashimoto, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed Jul. 15, 1981, Ser. No. 283,693
Claims priority, application Japan, Jan. 21, 1981, 56-2020
Term of patent 14 years
U.S. Cl. D16—10



273,872
X-RAY-FILM-PROCESSOR
Norbert Schlagheck, Fuerstenfeldbruck, and Lutz Rabold, Söcking, both of Fed. Rep. of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Fed. Rep. of Germany
Filed Dec. 12, 1980, Ser. No. 216,602
Claims priority, application Fed. Rep. of Germany, Dec. 6, 1980, 5 MR 587 G 175/80-3
Term of patent 14 years
U.S. Cl. D16—34

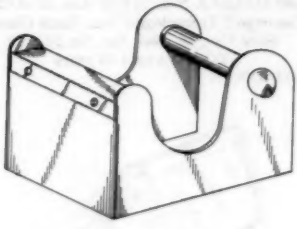


273,873
TEACHING CLOCK
Frank Alessio, 1572-79th St., Brooklyn, N.Y. 11228
Filed Jul. 13, 1981, Ser. No. 282,550
Term of patent 14 years
U.S. Cl. D19—64

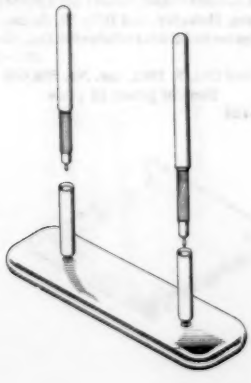


273,874
CORE FOR ELONGATED STRIP
Yo Sato, Tokyo, Japan, assignor to Kabushiki Kaisha Sato Kenkyusho, Japan
Division of Ser. No. 32,917, Apr. 24, 1979, Pat. No. Des. 263,400, which is a continuation-in-part of Ser. No. 715,250, Aug. 17, 1976, Pat. No. Des. 252,755, which is a continuation-in-part of Ser. No. 646,510, Jan. 5, 1976, abandoned. This application Jul. 2, 1981, Ser. No. 279,845
Term of patent 14 years
U.S. Cl. D19—67

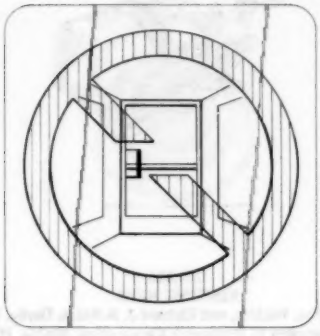
273,875
DISPENSER FOR A ROLL OF ALUMINUM FOIL
Steven G. Hill, P.O. Box 252, Redwood City, Calif. 94063
Filed Apr. 13, 1981, Ser. No. 253,603
Term of patent 14 years
U.S. Cl. D19—69



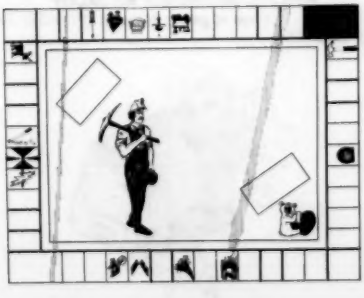
273,876
COMBINED DESK PEN SET AND STAND
Mel Evenson, San Pedro, Calif., assignor to Eldon Industries, Inc., Inglewood, Calif.
Filed Apr. 15, 1982, Ser. No. 368,714
Term of patent 14 years
U.S. Cl. D19—75



273,877
NO ENTRY SYMBOL FOR GLASS DOOR AND THE LIKE
Jack Darrell, 1646 Old Spanish Tr., Houston, Tex. 77054
Filed Mar. 15, 1982, Ser. No. 358,152
Term of patent 14 years
U.S. Cl. D20—11



273,878
GAME BOARD
Carol A. Salus, R.R. 3, Harrisburg, Ill. 62946
Filed Dec. 10, 1980, Ser. No. 214,882
Term of patent 14 years
U.S. Cl. D21—30

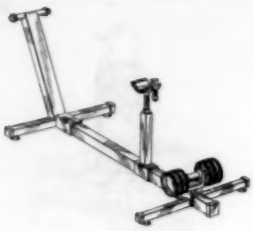


273,879
GAME PLAYING PIECE
Shawn D. Olfman, and Jerry A. Olfman, both of 70 Poison Ave., Winnipeg, Manitoba, Canada (R2W 0M2)
Continuation-in-part of Ser. No. 908,919, May 22, 1978. This application Jul. 16, 1981, Ser. No. 283,965
Claims priority, application Canada, Feb. 6, 1978, 16067716
Term of patent 14 years
U.S. Cl. D21—51

273,880
TOY BUBBLE BLOWER
Philip D. Bart, Coral Springs, Fla., assignor to M & B Toys, S.A., Colon, Panama
Continuation-in-part of Ser. No. 219,143, Dec. 30, 1980. This application Jun. 17, 1981, Ser. No. 274,479
Term of patent 14 years
U.S. Cl. D21—61

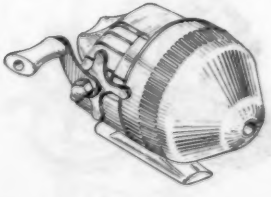
273,881
TOY TRACKWAY HAVING MOVING COMPONENTS
Man-Kwai Lee, Kowloon, Hong Kong, assignor to New Bright Industrial Company, Limited, Kowloon, Hong Kong
Filed Oct. 26, 1981, Ser. No. 315,257
Claims priority, application United Kingdom, Jul. 16, 1981, 81/1001522
Term of patent 14 years
U.S. Cl. D21—143

273,882
BICYCLE EXERCISE STAND
Richard M. Bryne, San Diego, Calif., assignor to SkidLid Specialties, Inc., San Diego, Calif.
Filed Nov. 23, 1981, Ser. No. 323,545
Term of patent 14 years
U.S. Cl. D21—191

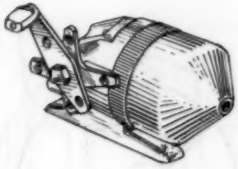


273,883
TRAPPING TACKLE
Berndt J. G. Sundberg, Solhemsgatan 23, S-570 80 Virserum, Sweden
Filed Sep. 15, 1981, Ser. No. 302,619
Claims priority, application Sweden, Jun. 18, 1981, 81-1414
Term of patent 14 years
U.S. Cl. D22—18

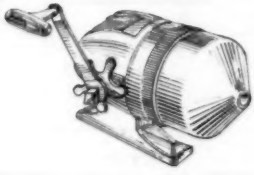
273,884
FISHING REEL
Robert W. Fee, Wichita, and Richard J. Robbins, Derby, both of Kans., assignors to Brunswick Corporation, Skokie, Ill.
Filed Apr. 5, 1982, Ser. No. 364,033
Term of patent 14 years
U.S. Cl. D22—25



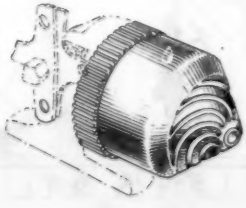
273,885
FISHING REEL
Richard J. Robbins, Derby, Kans., assignor to Brunswick Corporation, Skokie, Ill.
Filed Jun. 10, 1982, Ser. No. 386,627
Term of patent 14 years
U.S. Cl. D22—25



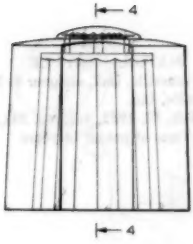
273,886
FISHING REEL
Robert W. Fee, Wichita, and Richard J. Robbins, Derby, both of Kans., assignors to Brunswick Corporation, Skokie, Ill.
Filed Jun. 10, 1982, Ser. No. 386,628
Term of patent 14 years
U.S. Cl. D22—25



273,887
FISHING REEL CONE
John W. Puryear, Tulsa, Okla., assignor to Brunswick Corporation, Skokie, Ill.
Filed Jun. 24, 1982, Ser. No. 391,419
Term of patent 14 years
U.S. Cl. D22—25

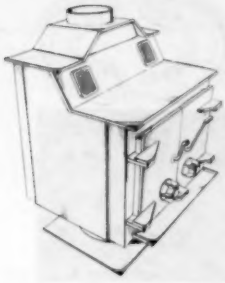


273,888
COMBINED HANDLE AND CAP FOR A SANITARY FITTING
James E. Niemann, Louisville, Ky., assignor to American Standard, Inc., New York, N.Y.
Division of Ser. No. 169,538, Jul. 17, 1980. This application Dec. 20, 1982, Ser. No. 451,507
Term of patent 14 years
U.S. Cl. D23—28

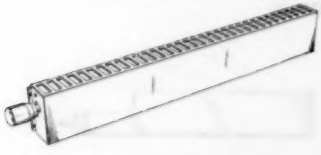


273,889
BATHTUB LEG
Christian Ragonot, Boulogne sur Seine, France, assignor to Societe Generale de Fonderie, Paris, France
Filed Dec. 17, 1981, Ser. No. 331,886
Claims priority, application France, Jun. 19, 1981, 81/2194
Term of patent 14 years
U.S. Cl. D23—70

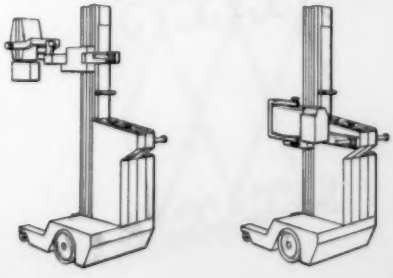
273,890
WOOD STOVE
Anthony A. Mote, 9808 Polk East, Tacoma, Wash. 98445
Division of Ser. No. 212,231, Dec. 2, 1980, Pat. No. Des. 269,542. This application Sep. 27, 1982, Ser. No. 432,991
Term of patent 14 years
U.S. Cl. D23—97



273,891
HEAT CONVECTOR
Jan Hiselius, PL 185 B, S-260 83 Vejbystrand, Sweden
Filed Dec. 29, 1981, Ser. No. 335,376
Claims priority, application Sweden, Jun. 29, 1981, 81-1473
Term of patent 14 years
U.S. Cl. D23—114



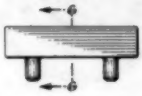
273,892
MOBILE X-RAY APPARATUS
Kenneth R. Fenne, Glen Ellyn, and Carl A. Wassell, Streamwood, both of Ill., assignors to Techny Industries, Inc., Glenview, Ill.
Filed Sep. 4, 1981, Ser. No. 299,626
Term of patent 14 years
U.S. Cl. D24—2



273,893
HINGED DENTAL TRAY
Stewart Weitzman, Lake Oswego, Oreg., assignor to Cooper Laboratories, Inc., Palo Alto, Calif.
Filed Oct. 19, 1981, Ser. No. 312,972
Term of patent 14 years
U.S. Cl. D24—16

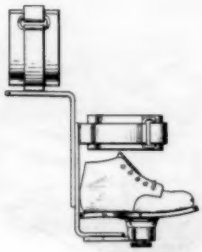
273,894
PIN HOLDER ALIGNMENT GUIDE FOR THE IMPLANTATION OF A PROSTHETIC KNEE
Robert V. Kenna, Hackensack, N.J., assignor to Howmedica, Inc., New York, N.Y.
Filed Feb. 18, 1982, Ser. No. 350,012
Term of patent 14 years
U.S. Cl. D24—26

273,895
FEMORAL CUTTING JIG FOR THE IMPLANTATION OF A PROSTHETIC KNEE
Robert V. Kenna, Hackensack, N.J., assignor to Howmedica, Inc., New York, N.Y.
Filed Feb. 18, 1982, Ser. No. 350,124
Term of patent 14 years
U.S. Cl. D24—26



273,896
NATURAL NIPPLE
Ronald C. Fuller, Evansville, Ind., assignor to Mead Johnson & Company, Evansville, Ind.
Filed Feb. 22, 1982, Ser. No. 351,078
Term of patent 14 years
U.S. Cl. D24—46

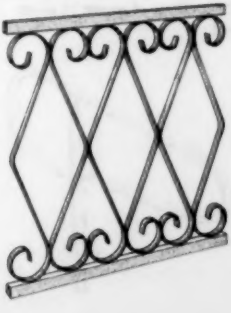
273,897
TIBIAL TORSION SPLINT
Ross L. Bremer, 1107 Margaret St. (at Five Points), Jacksonville, Fla. 32204
Filed Jul. 1, 1981, Ser. No. 279,513
Term of patent 14 years
U.S. Cl. D24—64



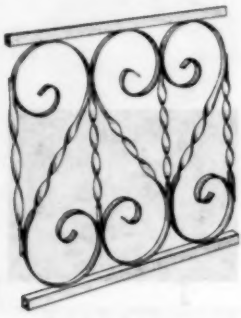
273,898
MICROSCOPE LABORATORY SLIDE
Donald W. Valencia, El Dorado Hills, Calif., assignor to Immuno Concepts, Inc., Sacramento, Calif.
Filed Jan. 9, 1981, Ser. No. 223,674
Term of patent 14 years
U.S. Cl. D24—99

273,899
HAND-HEWN TEXTURED PANEL
Stephen J. Tellman, Patterson, N.Y., assignor to Champion International Corporation, Stamford, Conn.
Filed Jul. 27, 1981, Ser. No. 287,507
Term of patent 14 years
U.S. Cl. D25—85

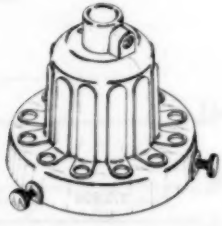
273,900
GRILL
Harvey Porter, Narberth, and Rubina M. Long, Philadelphia, both of Pa., assignors to Royal Factories, Inc., Philadelphia, Pa.
Filed May 28, 1982, Ser. No. 382,946
Term of patent 14 years
U.S. Cl. D25—87



273,901
GRILL
Harvey Porter, Narberth, and Rubina M. Long, Philadelphia, both of Pa., assignors to Royal Factories, Inc., Philadelphia, Pa.
Filed Jun. 7, 1982, Ser. No. 385,836
Term of patent 14 years
U.S. Cl. D25—87

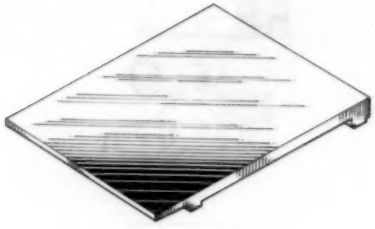


273,902
SHADE HOLDER
Warren E. Dennis, Pasadena, Calif., assignor to Casablanca Fan Company, Inc., City of Industry, Calif.
Filed Nov. 10, 1981, Ser. No. 319,935
Term of patent 14 years
U.S. Cl. D26—140



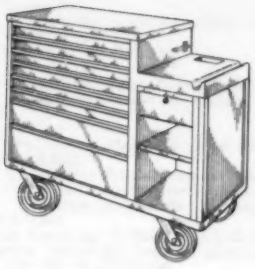
273,903
DIVIDER FOR A CATTLE STALL
Anthony M. Wilcenski, and Jerome A. Wilcenski, both of S47 W25161 Lawnsdale Rd.-Hwy. 1, Waukesha, Wis. 53186
Filed Jul. 22, 1982, Ser. No. 400,853
Term of patent 14 years
U.S. Cl. D30—2

273,904
DISH DRAINER TRAY OR SIMILAR ARTICLE
Damien P. Pacheco, 1055 Komohana St., Hilo, Hi. 96720
Filed Nov. 16, 1981, Ser. No. 321,681
Term of patent 14 years
U.S. Cl. D32—56

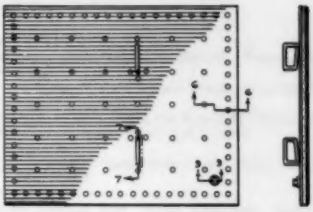


273,905
MOBILE GOLF CLUB CARRIER
Göran Rosén, Rådagatan 5, Lidköping, Sweden (53151)
Filed Oct. 1, 1981, Ser. No. 307,689
Claims priority, application United Kingdom, Apr. 1, 1981, 999750
Term of patent 14 years
U.S. Cl. D34—15

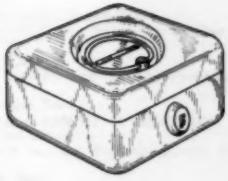
273,906
MEDICATION CART
Eric C. Norlin, Coatesville, Pa., assignor to Lionville Systems, Inc., Lionville, Pa.
Filed Nov. 5, 1981, Ser. No. 318,382
Term of patent 14 years
U.S. Cl. D34—19



273,907
AIR FLOTATION PALETTE
Warren C. Schroeder, Gellett Suite C-603, 2400 Virginia Ave. NW., Washington, D.C. 20037
Filed Apr. 22, 1981, Ser. No. 256,480
Term of patent 14 years
U.S. Cl. D34—38



273,908
MONEY-BOX OR SIMILAR ARTICLE
Eduard Hoogeveen, Leersum, Netherlands, assignor to Metaalwarenfabriek Hoogmerk B.V., Leersum, Netherlands
Filed Mar. 24, 1982, Ser. No. 361,202
Term of patent 14 years
U.S. Cl. D99—28



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 15TH DAY OF MAY, 1984

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

"A" Company: *See*—
Williamson, Eugene; Thompson, Stephen M.; and Evans, Derek K., 4,448,203, Cl. 128-733.000.

AB Akerlund & Rausing: *See*—
Jeppsson, Jan B.; and Pollak, Zoltan, 4,448,324, Cl. 220-266.000.

Abbott Laboratories: *See*—
Pohl, Peter H., 4,448,011, Cl. 53-512.000.

Abe, Daisuke: *See*—
Yokota, Takashi; Yamazaki, Shigeru; Kanmoto, Yoshiaki; Kawazu, Motoaki; Murayama, Noboru; and Abe, Daisuke, 4,449,151, Cl. 358-293.000.

Abe, Masahiro: *See*—
Ito, Nobuo; Takeuchi, Koji; Abe, Masahiro; and Hirai, Kiyomiki, 4,448,949, Cl. 528-99.000.

Abe, Mitsuo; Tsuchikawa, Syuji; Fukuta, Teizo; and Asakawa, Tsugio, to Japan Synthetic Rubber Co., Ltd. Process for producing α-methyl styrene-methyl methacrylate-acrylonitrile thermoplastic resin. 4,448,580, Cl. 525-71.000.

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Abel, Edward P., to Eastman Kodak Company. Polymeric timing layer for color transfer assemblages. 4,448,874, Cl. 430-215.000.

Ace Pak Company Incorporated: *See*—
Nakajima, Mutsuhiko, 4,448,013, Cl. 53-565.000.

Ache, Rollin W.: *See*—
Fascenda, Anthony C.; Gregg, Daniel L.; and Ache, Rollin W., 4,449,114, Cl. 340-988.000.

Achtman, Malcolm S.: *See*—
Achtman, Myron B.; and Achtman, Malcolm S., 4,448,520, Cl. 355-74.000.

Achtman, Myron B.; and Achtman, Malcolm S. Photographic printing device. 4,448,520, Cl. 355-74.000.

Acrometal Products, Inc.: *See*—
Brunet, George A.; and Cowan, Richard J., 4,448,578, Cl. 432-72.000.

Acushnet Company: *See*—
Reid, Walter L., Jr.; Van Stone, Robert A.; and Delano, Ralph L., 4,448,290, Cl. 188-82.700.

Adachi, Hideo: *See*—
Kakehi, Sasuga; Nakagawa, Nobuhiko; Adachi, Hideo; and Takaya, Tadashi, 4,449,019, Cl. 179-110.00A.

Adams, Frederick J., to Cam Gears Limited. Rack bar and pinion assembly and a steering gear including such an assembly. 4,448,088, Cl. 74-422.000.

Adams, George C. Wall panel fastener. 4,448,007, Cl. 52-489.000.

Adams, Jack B. Fire escape device. 4,448,281, Cl. 182-5.000.

Adlhoch, Richard H., to Motorola, Inc. Memory with reference voltage generator. 4,449,203, Cl. 365-104.000.

Advance Enterprises, Inc.: *See*—
Faltin, Hans G., 4,448,408, Cl. 271-277.000.

Afonso, Adriano, to Schering Corporation. 2-(Amino acid-thio)-2-penem-3-carboxylic acids and congeners. 4,448,782, Cl. 424-270.000.

Agency of Industrial Science and Technology: *See*—
Shimada, Junichi; Mitsuhashi, Yoshinobu; Sakurai, Kenjiro; Morikawa, Takitaro; and Mitsuzuka, Shuichi, 4,449,204, Cl. 365-127.000.

AGFA-Gevaert Aktiengesellschaft: *See*—
Bauer, Walter; Farber, Heinrich; and Muller, Jurgen, 4,448,508, Cl. 354-281.000.

Agnor, William C.; Lafferty, Edwin C.; and Toliver, Samuel, to General Electric Company. Circuit for controlling the output level of an electronic device. 4,449,104, Cl. 330-279.000.

Aichi Steel Works, Ltd.: *See*—
Yamamoto, Toshiro; Kobayashi, Ryohei; Kurimoto, Mamoru; and Ozone, Toshio, 4,448,617, Cl. 148-36.000.

Aiko Engineering Co. Ltd.: *See*—
Shimizu, Sachio, 4,448,574, Cl. 417-488.000.

Air Products and Chemicals, Inc.: *See*—
Fasolka, Michael J.; and Milligan, Barton, 4,448,939, Cl. 525-474.000.

Airco, Inc.: *See*—
Marancik, William G., 4,447,946, Cl. 29-599.000.

Aire, Tatsuo: *See*—
Senoo, Akira; Nezu, Yuzo; Ito, Masanori; Nagano, Hironobu; and Aire, Tatsuo, 4,448,144, Cl. 114-102.000.

Aisan Industry Co., Ltd.: *See*—
Kozawa, Tadashi, 4,448,594, Cl. 55-387.000.

Aisin Seiki Kabushiki Kaisha: *See*—
Hashimoto, Nobuyuki; and Hattori, Takemi, 4,448,228, Cl. 141-114.000.
Katagiri, Masayoshi; and Kondo, Toshio, 4,448,287, Cl. 188-73.310.

Aitoku Company Limited: *See*—
Senoo, Akira; Nezu, Yuzo; Ito, Masanori; Nagano, Hironobu; and Aire, Tatsuo, 4,448,144, Cl. 114-102.000.

Ajiro, Shuichi: *See*—
Ishikawa, Yasuaki; Ajiro, Shuichi; and Wada, Masami, 4,448,269, Cl. 175-335.000.

Akagami, Akira: *See*—
Senaha, Susumu; Kyo, Suizo; Shimomura, Susumu; Akagami, Akira; Imai, Hiroshi; Ohno, Akira; Katayama, Shitomi; and Nomura, Suguru, 4,448,855, Cl. 428-632.000.

Akasaka, Yoichi, to Mitsubishi Denki Kabushiki Kaisha. Method of fabricating semiconductor devices. 4,448,632, Cl. 156-603.000.

Akashi, Akira: *See*—
Katsuma, Makoto; Kamata, Shigeru; Saito, Syuichiro; Kawamura, Masaharu; and Akashi, Akira, 4,448,509, Cl. 354-286.000.

Akesson, Yngve R., to Societe d'Assistance Technique pour Produits Nestle S.A. Process for producing elongated rod-shaped comminuted meat product. 4,448,793, Cl. 426-241.000.

Akita, Shigeyuki: *See*—
Kitagawa, Junji; Akita, Shigeyuki; Kasegawa, Norimichi; and Nakamura, Akira, 4,448,275, Cl. 180-79.100.

Aktiebolaget Electrolux: *See*—
Lindqvist, Lennart S. A., 4,447,931, Cl. 15-365.000.

Aktiengesellschaft Adolf Saurer: *See*—
Viniczay, Gabriella F.; and Roehrich, Siegfried, 4,448,295, Cl. 192-125.00A.

Aktiengesellschaft Adolph Saurer: *See*—
Zwiener, Rudolf; Lucian, Anton; and Gattiker, Ernst, 4,448,220, Cl. 139-1.00E.

Akutsu, Fumihiko: *See*—
Takemura, Yasuhiko; and Akutsu, Fumihiko, 4,448,075, Cl. 73-626.000.

Akzona, Incorporated: *See*—
Moritz, George J., 4,448,682, Cl. 210-101.000.

Albany International Corp.: *See*—
Bolton, Joseph A.; and Feehery, George R., 4,447,924, Cl. 8-151.000.

Albrecht, Konrad: *See*—
Schumacher, Hans; Albrecht, Konrad; and Heinrich, Rudolf, 4,448,602, Cl. 71-90.000.

Albro, Carl S.: *See*—
Hackman, Donald J.; Caudy, Don W.; Wernli, Robert L.; and Albro, Carl S., 4,448,569, Cl. 405-190.000.

Aldinger, Darrell D.; and Van Wagoner, Roger B. Water faucet modifying apparatus. 4,448,351, Cl. 239-25.000.

Alexander, Donald: *See*—
Harlow, Stanley D.; and Alexander, Donald, 4,448,357, Cl. 241-32.000.

Alferness, Rodney C., to Bell Telephone Laboratories, Incorporated. Traveling wave, electrooptic devices with effective velocity matching. 4,448,479, Cl. 350-96.140.

Alfred Gutmann GmbH and Co., Firma: *See*—
Riedel, Erich O., 4,447,925, Cl. 15-104.06A.

Alger, David W. Conveyor system with frictionally driven conveyor belt. 4,448,301, Cl. 198-778.000.

Allen-Bradley Company: *See*—
Smith, Enoch P., 4,449,076, Cl. 315-312.000.

Allen, Constance C.: *See*—
Vicino, Robert K.; Cooper, Dale L.; Pembleton, Lauren M.; and Allen, Constance C., 4,447,974, Cl. 40-538.000.

Allen, Diane M.: *See*—
Bleile, Dennis M.; Allen, Diane M.; Tanaka, Steve K.; and Matarrese, Francis J., Jr., 4,448,888, Cl. 436-67.000.

Allen, Gary F., to Mobay Chemical Corporation. Catalytic hydrogenation of di(4-aminophenyl)methane. 4,448,995, Cl. 564-451.000.

Allen, Robert J.: *See*—
Kauffman, Ivan L.; and Allen, Robert J., 4,448,012, Cl. 53-563.000.

Allied Corporation: *See*—
Bose, Debasis; Datta, Amitava; and DeCristofaro, Nicholas J., 4,448,618, Cl. 148-403.000.
Bose, Debasis; Datta, Amitava; and DeCristofaro, Nicholas J., 4,448,851, Cl. 428-606.000.
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Allpac Holding B.V.: *See*—
Rombouts, Rombout M., 4,448,233, Cl. 160-319.000.

Allunions-Forschungsinstitut fur physikalischen Apparatebau: *See*—
Burov, Vadim K.; Vanjukin, Boris M.; Voskoboev, Anatolij E.; Kon'kov, Nikolaj G.; Orechov, Vsevolod D.; Pismannik, Konstantin D.; Svin'in, Michail P.; Fedotov, Michail I.; Damerau, Werner; Dulling, Achim; Heger, Adolf; Reichardt, Gerd; and Wilde, Gotthard, 4,448,048, Cl. 68-5.00E.

Allunions-Forschungsinstitut fur Strahlentecknik: *See*—
Burov, Vadim K.; Vanjukin, Boris M.; Voskoboev, Anatolij E.; Kon'kov, Nikolaj G.; Orechov, Vsevolod D.; Pismannik, Konstantin D.; Svin'in, Michail P.; Fedotov, Michail I.; Damerau, Werner; Dulling, Achim; Heger, Adolf; Reichardt, Gerd; and Wilde, Gotthard, 4,448,048, Cl. 68-5.00E.

Alsthom-Atlantique: *See*—
Duchene, Jean C., 4,449,110, Cl. 336-94.000.

Altantic Richfield Company: *See*—
Sun, Hsiang-Ning, 4,448,898, Cl. 502-350.000.

Althouse, James W., III, to Dow Chemical Company, The. Apparatus and method for controlling the level of a liquid in a tank. 4,448,210, Cl. 137-2.000.

Altman, Richard M., to Industrial Electronic Engineers, Inc. Rear end projection system employing aspherical lenses. 4,448,504, Cl. 353-36.000.

Aluminum Company of America: *See*—
Kutcher, Howard R., 4,449,053, Cl. 290-44.000.

Alwani, Dru W.: *See*—
Hort, Eugene V.; Anderson, Lowell R.; and Alwani, Dru W., 4,448,710, Cl. 252-390.000.

Amagai, Akikazu: *See*—
Sugio, Akitoshi; Masu, Masanobu; and Amagai, Akikazu, 4,448,931, Cl. 525-68.000.

Amelio, William J.; Lemon, Gary K.; Markovich, Voya; Panasik, Theodore; Sambucetti, Carlos J.; and Trevitt, Donna J., to International Business Machines Corporation. Method for selective electroless plating of copper onto a non-conductive substrate surface. 4,448,804, Cl. 427-98.000.

Amemori, Koichi; and Kawabe, Toshihiko, to Yanmar Diesel Engine Co., Ltd. Overhead cam type diesel engine. 4,448,166, Cl. 123-445.000.

American Artos Corporation: *See*—
Johnson, David F., 4,448,582, Cl. 8-149.100.

American Cyanamid Company: *See*—
Dusza, John P.; Joseph, Joseph P.; and Bernstein, Seymour, 4,448,973, Cl. 348-362.000.
Keeling, Ronald J.; Roe, Jin-Young K.; and Mollmann, Henry C., 4,448,849, Cl. 428-503.000.

American Hoechst Corporation: *See*—
Corso, Anthony J., 4,448,583, Cl. 8-527.000.
Gillich, Thomas N.; Walls, John E.; Wanat, Stanley F.; and Rozell, William J., 4,448,647, Cl. 204-33.000.
Walls, John E.; and Dhillon, Major S., 4,448,873, Cl. 430-157.000.

American Hoist & Derrick Company: *See*—
Delago, Pierre C., 4,448,396, Cl. 254-340.000.

American Home Products Corporation: *See*—
Klaubert, Dieter H.; Kreft, Anthony F., III; and Bell, Stanley C., 4,448,729, Cl. 260-465.00D.

American Hospital Corporation: *See*—
Wertz, Richard K.; Cook, Albert M.; and Hathaway, James C., 4,448,534, Cl. 356-435.000.

American Organics Corp.: *See*—
Martenson, Irvin W., 4,448,916, Cl. 524-106.000.

Ameritek, Inc.: *See*—
Davidian, Michael, 4,448,826, Cl. 428-35.000.

AMGAS B.V.: *See*—
van Hatten, Hendricus W. M., 4,448,219, Cl. 138-149.000.

Amos, Paul E. Furniture assembly for storage of articles. 4,448,463, Cl. 312-111.000.

AMP Incorporated: *See*—
Berry, Donald A.; and Fabian, David J., 4,448,471, Cl. 339-91.00R.
Coldren, Daniel R., 4,448,468, Cl. 339-74.00R.
Felix, Ronald G.; and Hoffman, Douglas R., 4,448,473, Cl. 339-99.00R.
Hilhorst, Jacques J.; and Stillie, Donald G., 4,449,023, Cl. 200-159.00B.
Weidler, Charles H., 4,448,467, Cl. 339-17.0LC.

Ampex Corporation: *See*—
Chang, Hao-Jan; and Nishimura, Akihiro, 4,448,846, Cl. 428-412.000.
Yonenaka, Thomas H., 4,448,465, Cl. 312-223.000.

Amsted Industries Incorporated: *See*—
Gain, Lorand H., Jr., 4,448,148, Cl. 116-277.000.

Anderson Bros. Mfg. Co.: *See*—
Stohlquist, Roger H.; Brown, Jonathan G.; and Baker, Kenneth V., 4,448,010, Cl. 53-450.000.

Anderson, Lowell R.: *See*—
Hort, Eugene V.; Anderson, Lowell R.; and Alwani, Dru W., 4,448,710, Cl. 252-390.000.
Lin, I. Sioun; Gromelski, Stanley J., Jr.; Hort, Eugene V.; Anderson, Lowell R.; and Williams, Earl P., 4,448,905, Cl. 521-164.000.

Anderson, Milan B. Collapsible hand truck. 4,448,434, Cl. 280-40.000.

Ando, Hideo, to Tokyo Shibaura Denki Kabushiki Kaisha. Information recording medium. 4,449,138, Cl. 346-135.100.

Ando, Masao: *See*—
Senda, Kenichi; Ando, Masao; Nakamura, Kyoichi; Mori, Kiyoshi; and Nishida, Tatchiko, 4,448,901, Cl. 521-60.000.

Andral Corporation: *See*—
Marques, Salvador A., 4,448,283, Cl. 182-164.000.

Andres, Rudolf; Grantz, Helmut; Munzel, Wolf-Dietrich; and Odebrecht, Wolfgang, to Daimler-Benz Aktiengesellschaft. Heat-exchanger with a bundle of parallelly extending pipes adapted to be acted upon by air. 4,448,241, Cl. 165-104.140.

Andres, Rudolf; Grantz, Helmut; Munzel, Wolf-Dietrich; and Odebrecht, Wolfgand, to Daimler-Benz Aktiengesellschaft. Heat-exchanger with a bundle of parallelly extending pipes adapted to be acted upon by air. 4,448,242, Cl. 165-104.140.

Andrews, Edward W.; Celek, John E.; Morse, Royal R., III; and Bergholz, Eugene W., to General Electric Company. Digital fluorographic processor control. 4,449,195, Cl. 364-900.000.

Angevine, Philip J.; Carroll, Michael B.; Shih, Stuart S.; and Tabak, Samuel A., to Mobil Oil Corporation. Process for the combined deashing/deasphalting of coal liquids. 4,448,672, Cl. 208-86.000.

Anscher, Bernard, to National Molding Corporation. Cable harness. 4,447,934, Cl. 24-16.0PB.

Anspaugh, Dennis J.; and Siegrist, Ronald R., to International Telephone and Telegraph Corporation. Motor mount structure for vehicle seat adjustment apparatus. 4,448,381, Cl. 248-394.000.

Anthony, Andrew J., to Combustion Engineering, Inc. Lateral support for nuclear fuel assemblies. 4,448,745, Cl. 376-448.000.

Aoki, Hachiro: *See*—
Takahashi, Seizi; and Aoki, Hachiro, 4,448,174, Cl. 123-502.000.

Aoki, Tsutomu: *See*—
Nagata, Wataru; and Aoki, Tsutomu, 4,448,720, Cl. 260-239.00A.

Aoyama, Jun; and Nakayama, Noboru, to Nippondenso Co., Ltd. Ignition system for internal combustion engines. 4,448,182, Cl. 123-605.000.

Aoyama, Keizo; and Yamauchi, Takahiko, to Fujitsu Limited. Buffer circuit for generating output signals having short recovery time. 4,449,066, Cl. 307-482.000.

Apeldoorn, Willem: *See*—
van der Weerdt, Antonius J. A.; and Apeldoorn, Willem, 4,448,712, Cl. 252-522.00R.

Aplenc, Andrej M. R., to Sperry Corporation. Downhole liquid trap for a geothermal pumping system. 4,448,022, Cl. 60-641.400.

Appenzeller, Valentin; and Mingers, Peter F., to Kusters, Eduard. Revolving hollow roll with a gap seal. 4,447,940, Cl. 29-116.0AD.

Apperson, Kenneth P.; and Morgan, Cecil D., to Hastings Fiber Glass Products, Inc. Insulator guard. 4,449,010, Cl. 174-5.00R.

Applied Fusion Research Corporation: *See*—
Bass, Robert W., 4,448,743, Cl. 376-103.000.

Aragon, Yvan. Heat exchanger with a capillary structure for refrigeration equipment and/or heat pumps and method of making the same. 4,448,043, Cl. 62-515.000.

Arakawa, Hiroshi, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Apparatus for mounting weft guiding members in jet looms. 4,448,222, Cl. 139-435.000.

Arinobu, Mutsihiro; and Suzuki, Isamu, to Tokyo Shibaura Denki Kabushiki Kaisha. Pressure wave attenuating main steam line apparatus. 4,448,023, Cl. 60-644.100.

Arney, Jonathon S.; and Wright, Richard F., to Mead Corporation, The. Developer roll. 4,448,516, Cl. 355-27.000.

Arnold, Fred E.: *See*—
Reinhardt, Bruce A.; and Arnold, Fred E., 4,449,001, Cl. 568-31.000.

Asahara, Toshio. Thermally insulated ceramic container and method for manufacture thereof. 4,448,825, Cl. 428-35.000.

Asai, Ryuichi; Okamoto, Takeshi; and Minagawa, Shoichi, to Clarion Co., Ltd. Surface elastic wave element. 4,449,107, Cl. 333-150.000.

Asakawa, Tsugio: *See*—
Abe, Mitsuo; Tsuchikawa, Syuji; Fukuta, Teizo; and Asakawa, Tsugio, 4,448,580, Cl. 525-71.000.

Asayama, Yoshiaki, to Mitsubishi Denki Kabushiki Kaisha. Device for detecting the intake air flow rate in an internal combustion engine. 4,448,064, Cl. 73-118.200.

Ash, Philip S.; and Hider, Robert C., to National Research Development Corporation. Liposomes and their use in treating human or other mammalian patients. 4,448,765, Cl. 424-14.000.

Ashland Oil, Inc.: *See*—
Schafer, Robert J., 4,448,907, Cl. 523-139.000.

Asia Oil Company Limited: *See*—
Kageyama, Yoichi; Onuma, Kazuhiko; Kawakami, Toshihiro; and Suzuki, Makoto, 4,448,896, Cl. 502-314.000.

Assil, Naim Z.; and Hughes, Richard H., to RCA Corporation. Color picture tube with focusing electrode having electrostatic field distortion aperture therein. 4,449,069, Cl. 313-412.000.

Associpak International Inc.: *See*—
Malthouse, Martin D.; and Groeger, Heinz K., 4,448,629, Cl. 156-510.000.

AT & T Technologies, Inc.: *See*—
Golinski, Stanley; and Rapp, Willard E., 4,447,948, Cl. 29-829.080.
Hardesty, Edwin C., 4,448,472, Cl. 339-97.00P.

Atlantic Richfield Company: *See*—
Gastinger, Robert G., 4,448,897, Cl. 502-350.000.
Mackenzie, John D.; and Horiuchi, Tetsuro, 4,448,599, Cl. 65-21.400.
Masologites, George P.; Sun, Jui-Yuan; Yoo, Jin S.; and Burk, Emmett H., Jr., 4,448,584, Cl. 44-1.0SR.
Sofranko, John A.; and Leonard, John J., 4,448,985, Cl. 562-579.000.
Yoo, Jin S., 4,448,585, Cl. 44-51.000.

Atlas Sound Division of American Trading & Production Corporation: *See*—
Seebinger, Frederick L., 4,449,020, Cl. 179-147.000.

Atsumi, Morihiro: *See*—
Fukazawa, Takeshi; Yamaguchi, Shunzo; and Atsumi, Morihiro, 4,449,039, Cl. 219-553.000.

Augusta, George V. Board game. 4,448,423, Cl. 273-272.000.

Ausnit, Steven, to Minigrip, Inc. Device for and method of joining sheet material. 4,447,935, Cl. 24-201.00C.

Auto Specialties Manufacturing Company: *See*—
Ladewski, Bernard F., 4,448,392, Cl. 254-103.000.

Automation Industrielle SA: *See*—
Kohler, Andreas, 4,448,829, Cl. 222-107.000.

Azelrod, Norman N.; Haas, Peter; and Noess, Rainer, to Information Retrieval Systems Corp. Automatic high speed microfilm searching system. 4,448,503, Cl. 353-26.00A.

B.A.T. Cigaretten-Fabriken GmbH: *See*—
Schumacher, Gerd; and Masurat, Heinz-Werner, 4,448,079, Cl. 73-789.000.

B. F. Goodrich Company, The: *See*—
Olson, Alan J., 4,448,658, Cl. 204-159.180.
Solomon, Thomas S., 4,448,813, Cl. 427-381.000.

Baba, Kiyokazu, to Kabushiki Kaisha Komatsu Seisakusho. Infeed mechanism for a press. 4,448,056, Cl. 72-422.000.

Babcock & Wilcox Company, The: *See*—
Dougan, Donald R.; Larue, Albert D.; and Wolf, John J., 4,448,135, Cl. 110-263.000.
Jahsen, Felix S., 4,447,942, Cl. 29-157.400.

Baber, Samuel C., to Texas Instruments Incorporated. Laser assisted lift-off. 4,448,636, Cl. 156-643.000.

Bach, Nicholas J.; Kornfeld, Edmund C.; and Titus, Robert D., to Eli Lilly and Company. Hydroxyaminotetralincarboxamides. 4,448,990, Cl. 564-167.000.

Badesha, Santokh S.; and Loutfy, Rafik O., to Xerox Corporation. Process for preparation of high purity metals by the electrochemical reduction of chalcogenide esters. 4,448,646, Cl. 204-59.00M.

Badgley, Patrick R.; and Rosselli, Andrew C., to Cummins Engine Company, Inc. Injector for diesel engine. 4,448,169, Cl. 123-467.000.

Badsey, William J. Land vehicle. 4,448,278, Cl. 180-210.000.

Bahr, Albert: *See*—
Ludke, Hans; Bahr, Albert; Mehrhoff, Friedrich-Wilhelm; and Legner, Karl, 4,448,681, Cl. 210-97.000.

Baker, Kenneth V.: *See*—
Stohlquist, Roger H.; Brown, Jonathan G.; and Baker, Kenneth V., 4,448,010, Cl. 53-450.000.

Ball Corporation: *See*—
Paddock, Kimberly A.; and Ruth, Roy L., 4,449,109, Cl. 335-212.000.

Bally Manufacturing Corporation: *See*—
Clark, Norman R.; and Christian, George, 4,448,417, Cl. 273-121.00A.

Balzers Aktiengesellschaft: *See*—
Buhl, Rainer; Moll, Eberhard; and Daxinger, Helmut, 4,448,802, Cl. 427-42.000.
Wegmann, Urs, 4,448,653, Cl. 204-298.000.

BancTec, Inc.: *See*—
Eaton, Charles K.; Nolting, Eugene C.; and Norman, Thomas J., Jr., 4,448,631, Cl. 156-521.000.

Banno, Taiichi; Fujimori, Ryo; Takekawa, Hiroshi; and Hijikata, Kazuo, to Olympus Optical Co., Ltd. Liquid distributing device for use in chemical analyzer. 4,448,752, Cl. 422-81.000.

Barbier, William J., to Sporlan Valve Company. Refrigeration control system for modulating electrically-operated expansion valves. 4,448,038, Cl. 62-212.000.

Barbieri, Louis C. Endless track attachment for a vehicle. 4,448,273, Cl. 180-9.210.

Barby, Donald; Clarke, David E.; Lloyd, John; and Haq, Zia, to Lever Brothers Company. Article suitable for wiping hard surfaces. 4,448,704, Cl. 252-91.000.

Barclay, Donald J.; Morgan, William M.; and Vigar, James M., to International Business Machines Corporation. Trivalent chromium electroplating baths. 4,448,648, Cl. 204-51.000.

Barclay, Donald J.; Morgan, William M.; and Vigar, James M., to International Business Machines Corporation. Trivalent chromium electroplating baths. 4,448,649, Cl. 204-51.000.

Bariol, Roger; Lecomte, Jackie; and Bouvet, Jean-Marie, to Regie Nationale des Usines Renault. Differential type transit-time ionic pickup. 4,448,082, Cl. 73-861.050.

Barnwell, James W.; and Breton, Ernest J., to Deltech Engineering, Inc. Process for removing contaminants from compressed air. 4,448,757, Cl. 423-247.000.

Baron, Arthur L.; and Sivaramakrishnan, Parameswar, to Mobay Chemical Corporation. Polycarbonate having improved critical thickness. 4,448,950, Cl. 528-128.000.

Barrat, Christian R.; Walker, John R.; and Wevers, Jean, to Procter & Gamble Company, The. Laundry additive products containing amino-silanes. 4,448,699, Cl. 252-8.750.

Barrington, Burchus Q., to Halliburton Company. Tester valve with silicone liquid spring. 4,448,254, Cl. 166-373.000.

Barsa, Edward A.; and Sherwood, Philip W., to Upjohn Company, The. Compounds, compositions and process. 4,448,816, Cl. 427-388.200.

Barthell, Barry L.: *See*—
Duchane, David V.; and Barthell, Barry L., 4,448,622, Cl. 156-155.000.

Bartholic, David B., to Engelhard Corporation. Control of emissions in FCC regenerator flue gas. 4,448,674, Cl. 208-113.000.

Barzel, Eyal. Continuously variable torque transmitter. 4,448,087, Cl. 74-193.000.

BASF Aktiengesellschaft: *See*—
Dressel, Manfred; Greven, Johannes; Jeck, Arnulf; Magin, Rudolf; Nick, Gunther; Schaffarczyk, Paul; and Weiss, Guenther, 4,448,080, Cl. 73-799.000.
Lindner, Alfred; Volkamer, Klaus; and Wagner, Ulrich, 4,448,643, Cl. 203-34.000.
Rohr, Wolfgang; Hansen, Hanspeter; Plath, Peter; and Wuerzer, Bruno, 4,448,960, Cl. 544-282.000.
Sarnecki, Wilhelm; Kovacs, Jenoe; Loeser, Werner; Rudolf, Peter; and Vaeth, Guenter, 4,448,761, Cl. 423-632.000.
Stutz, Herbert; Illers, Karl H.; Haberkorn, Herbert; and Heckmann, Walter, 4,448,946, Cl. 528-67.000.

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Lauke, Arno, 4,448,812, Cl. 427-377.000.

BASF Wyandotte Corporation: *See*—
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Patton, John T., Jr.; and Rupert, John P., 4,448,952, Cl. 528-129.000.
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Basov, Emma; Grois, Igor; Margolin, Mark; and Berg, Alan, to TRW Inc. Fiber optic clamp. 4,448,481, Cl. 350-96.200.

Bass, Robert W., to Applied Fusion Research Corporation. Generation, insulated confinement, and heating of ultra-high temperature plasmas. 4,448,743, Cl. 376-103.000.

Bassett, Ronald M. Spinner for fishing lure, and fishing lure having spinner mounted thereon. 4,447,980, Cl. 43-42.140.

Bates, Jack R.; and Holtrop, John W., to United States of America, Navy. Elastomeric sway bracing and ejector system. 4,448,373, Cl. 244-137.00R.

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Kolitsch, Jorg; Sparwell, Norbert; and Brockmann, Eugen, 4,448,081, Cl. 73-861.030.

Baucom, Robert M., to United States of America, National Aeronautics and Space Administration. Process of making medical clip. 4,447,943, Cl. 29-423.000.

Bauer, Paul E. Level-travelling fishing lure. 4,447,981, Cl. 43-42.210.

Bauer, Walter; Farber, Heinrich; and Muller, Jurgen, to AGFA-Gevaert Aktiengesellschaft. Cut film cassette with two film chambers. 4,448,508, Cl. 354-281.000.

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Baumann, Hanns U.: *See*—
Maurer, Edward J., Jr.; Baumann, Hanns U.; and Watkins, Herbert E., 4,447,996, Cl. 52-79.100.

Baus, Heinz G. Method and device for manufacturing multi-ply sheets. 4,448,739, Cl. 264-132.000.

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Smetana, Karel; Busch, Harris; Busch, Rose K.; Gyorkey, Ferenc; Gyorkey, Phyllis; and Davis, Frances M., 4,448,890, Cl. 436-508.000.

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Fischer, Melch; and Brunner, Kurt, 4,448,853, Cl. 428-607.000.
Kopainsky, Jugen, 4,449,244, Cl. 455-603.000.
Kyrian, Bohumil, 4,449,103, Cl. 330-123.000.

Beach, Bruce A.: *See*—
Kelly, Guy M.; Roes, John B.; Walker, Samuel B.; and Beach, Bruce A., 4,449,186, Cl. 364-407.000.

Beall, Charles D., to Wayne H. Coloney Co., Inc. Stagger feed control circuit. 4,449,083, Cl. 318-602.000.

Bean, Lloyd F., to Xerox Corporation. Light means for exposing and light means for discharging in a electrophotographic printing machine. 4,448,512, Cl. 355-3.00R.

Beatty, William T. Convertible railway-highway vehicle. 4,448,132, Cl. 105-215.00C.

Beaver, Richard N.: *See*—
Dang, Hiep D.; Beaver, Richard N.; Spillers, Frank W.; and Hazelrigg, Mark J., Jr., 4,448,663, Cl. 204-270.000.

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Becker, Kunibert; Kirchbrucher, Rudiger; and Elsner, Burckhard, to Gewerkschaft Eisenhutte Westfalia. Drilling apparatus. 4,448,263, Cl. 173-34.000.

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Becker, Willi, to Willi Becker Ingenieurburo GmbH. Rudder with a stabilizer fin. 4,448,146, Cl. 114-162.000.

Bees, Paul R.: *See*—
Mongoven, Michael A.; Bees, Paul R.; and Earl, David C., 4,449,073, Cl. 315-130.000.

Behrendt, Martin, to Wickmann-Werke AG. Holder for an electrical component. 4,448,376, Cl. 248-27.300.
Behringwerke Aktiengesellschaft: *See*—
Pauly, Hans-Erwin; Kapmeyer, Wolfgang; and Seitz, Ulrich, 4,448,908, Cl. 523-201.000.
Belko, Robert P.: *See*—
Sprecker, Mark A.; Hanna, Marie R.; Tokarzewski, Richard J.; Belko, Robert P.; Watkins, Hugh; and Vock, Manfred H., 4,448,984, Cl. 560-256.000.
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Frystak, Richard; Johnston, Robert F.; and Flint, John R., 4,448,364, Cl. 242-674.000.
Bell, James P.; and De Nicola, Anthony J., Jr., to Shell Oil Company. Process for improving steel-epoxy adhesion. 4,448,847, Cl. 428-413.000.
Bell, Stanley C.: *See*—
Klaubert, Dieter H.; Kreft, Anthony F., III; and Bell, Stanley C., 4,448,729, Cl. 260-465.00D.
Bell Telephone Laboratories, Incorporated: *See*—
Alferness, Rodney C., 4,448,479, Cl. 350-96.140.
Bergman, John G.; Liao, Paul F.; and Wokaun, Alexander J., 4,448,485, Cl. 350-162.200.
Brus, Louis E.; and Rossetti, Ronald, 4,448,524, Cl. 356-36.000.
Burke, Edmund T.; Catalano, Joseph F.; Henderson, James A., Jr.; and Smith, Nicholas K., 4,449,017, Cl. 179-27.00D.
Flanagan, James L.; and Johnston, James D., 4,449,190, Cl. 364-513.500.
Frazer, Gerald L., 4,449,102, Cl. 328-162.000.
Henry, James L.; and Stocker, Wendy A., 4,449,197, Cl. 364-784.000.
Lee, Byung H.; and Lynch, John F., Jr., 4,449,238, Cl. 381-110.000.
Ziesse, Norman G., 4,449,174, Cl. 363-21.000.
Bellamy, Norman W.: *See*—
Wood, Eric; and Bellamy, Norman W., 4,448,020, Cl. 60-398.000.
Bellocci, Rio, to Pont-A-Mousson S.A. Centrifugally cast tube of spheroidal graphite cast-iron and its method of manufacture. 4,448,610, Cl. 148-3.000.
Belter, Paul. Balancing game. 4,448,416, Cl. 273-110.000.
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Bendix Corporation, The: *See*—
Gumkowski, Bert A.; and Schreiner, Peter J., 4,448,289, Cl. 188-73.450.
Peterson, Ann E., 4,448,470, Cl. 339-91.00R.
Ritsema, Irving R.; and Johannesen, Donald D., 4,448,291, Cl. 188-218.0XL.
Benisek, Ladislav; and Craven, Penelope C., to Wool Development International Limited. Textile finishing of keratinous articles. 4,448,817, Cl. 427-412.000.
Bente, Alfred, to Messrs. Adidas Sportschuhfabriken Adi Dassler AG. Football boot. 4,447,971, Cl. 36-133.000.
Berberat, Alexis: *See*—
Wisgott, Ulrich; and Berberat, Alexis, 4,448,794, Cl. 426-267.000.
Berg, Alan: *See*—
Basov, Emma; Grois, Igor; Margolin, Mark; and Berg, Alan, 4,448,481, Cl. 350-96.200.
Bergholz, Eugene W.: *See*—
Andrews, Edward W.; Celek, John E.; Morse, Royal R., III; and Bergholz, Eugene W., 4,449,195, Cl. 364-900.000.
Bergkuist, Carolyn: *See*—
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Bergman, Clark; Vergason, Gary E.; Clark, Robert; and Bosak, Shannon, to Multi-Arc Vacuum Systems Inc. Arc-initiating trigger apparatus and method for electric arc vapor deposition coating systems. 4,448,799, Cl. 427-37.000.
Bergman, John G.; Liao, Paul F.; and Wokaun, Alexander J., to Bell Telephone Laboratories, Incorporated. Harmonic generation using a surface of metal particles. 4,448,485, Cl. 350-162.200.
Bergquist, Everett J., to United Technologies Corporation. Shuttle for a tumbling operation. 4,447,992, Cl. 51-163.100.
Bergwerksverband GmbH: *See*—
Ludke, Hans; Bahr, Albert; Mehrhoff, Friedrich-Wilhelm; and Legner, Karl, 4,448,681, Cl. 210-97.000.
Berkowitz, Edward H., to Varian Associates, Inc. Dose compensation by differential pattern scanning. 4,449,051, Cl. 250-492.200.
Bernhardt, Lutz; and Kochert, Wilfried, to Computer Gesellschaft, Konstanz mbH. Method and circuit for segmentation of characters from a serially-read character sequence. 4,449,239, Cl. 382-9.000.
Bernhardt, Rainer: *See*—
Petsching, Helmut; Kremer, Walter; Bernhardt, Rainer; and Bockemuehl-Simon, Johannes J., 4,448,365, Cl. 242-71.800.
Bernstein, Seymour: *See*—
Dusza, John P.; Joseph, Joseph P.; and Bernstein, Seymour, 4,448,973, Cl. 548-362.000.
Berry, Donald A.; and Fabian, David J., to AMP Incorporated. Polarized locking latch cover for an electrical connector. 4,448,471, Cl. 339-91.00R.
Bertels, Herbert: *See*—
Gatzschmann, Horst; Bertels, Herbert; Hafner, Hubertus; and Schmid, Alfred, 4,448,836, Cl. 428-164.000.
Berthin, Jean-Claude, to Sea Tank Co. Method of constructing a concrete off-shore structure more than 200 m high stabilized on the sea bed by its own weight. 4,448,570, Cl. 405-204.000.
Berthold, Joachim; Diedrich, Bernd; Franke, Rainer; Hartlapp, Jurgen; Schafer, Werner; and Strobel, Wolfgang, to Hoechst Aktiengesellschaft. Process for the preparation of a polyolefin, and a catalyst for this process. 4,448,944, Cl. 526-119.000.
Best, Lorne A., to National Element, Inc. Ceramic heater support and spacer block. 4,449,016, Cl. 174-138.00J.
Biber, Klaus: *See*—
Muller, Ortwin; Biber, Klaus; Jakubowski, Heinz; and Hanemann, Gerhard, 4,448,498, Cl. 350-516.000.
Bidwell, Malcolm A. Forced air flue heater device. 4,448,348, Cl. 237-55.000.
Billimoria, Rustom M.: *See*—
Zaczepinski, Sioma; Billimoria, Rustom M.; Tao, Frank; Lington, Christopher G.; and Plumlee, Karl W., 4,448,665, Cl. 208-8.0LE.
Binder, Jean-Jacques; and Magnenet, Jean G., to Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme). Arrangement for holding a part attached to a support frame held against a rotatable member which is mounted within that support frame. 4,449,160, Cl. 360-104.000.
Binfare, Francesco, to C.D. & C Centro Design & Communicazione S.r.l. Modular supporting structure for tables, small tables, chairs and the like. 4,448,378, Cl. 248-188.700.
Binger, Bernhard, to Zahnradfabrik Friedrichshafen Aktiengesellschaft. Gear transmission for the final drive of heavy motor vehicles. 4,448,092, Cl. 74-770.000.
Binstock, Morton H.; McCloskey, Thomas H.; and Podolsky, Leaman B., to Westinghouse Electric Corp. Turbine high pressure bypass pressure control system. 4,448,026, Cl. 60-662.000.
Bio-Rad Laboratories, Inc.: *See*—
Bleile, Dennis M.; Allen, Diane M.; Tanaka, Steve K.; and Matarrese, Francis J., Jr., 4,448,888, Cl. 436-67.000.
Biomedica Foscama Industria Chimico-Farmaceutica S.p.A.: *See*—
Cattani, Luciano; and Costrini, Renato, 4,448,771, Cl. 424-180.000.
Bishop, Gary E., to General Motors Corporation. Variable-permeability, two-layer pattern coating for lost foam casting. 4,448,235, Cl. 164-34.000.
Bishop, Wayne S.; and Marsh, Richard A., to United States of America, Air Force. Deactivation of thionyl chloride cells. 4,448,859, Cl. 429-50.000.
Bison, Gunter: *See*—
Thewalt, Klaus; Bison, Gunter; and Egger, Heinz, 4,448,999, Cl. 564-495.000.
BIW Cable Systems, Inc.: *See*—
Garschick, Alfred, 4,449,013, Cl. 174-103.000.
Bixler, Kenneth D.: *See*—
Lord, Henry A.; Bixler, Kenneth D.; and Reifers, Richard F., 4,448,344, Cl. 229-2.5EC.
Black, Charles E., III: *See*—
Halstead, Raymond T.; and Black, Charles E., III, 4,448,390, Cl. 251-176.000.
Black & Decker Inc.: *See*—
Wilson, Peter H., 4,449,062, Cl. 307-328.000.
Black & Decker Manufacturing Company, The: *See*—
Kling, Larry K., 4,449,161, Cl. 361-152.000.
Black, Denny E.; and Garrett, David W., to Owens-Corning Fiberglas Corporation. Size for glass fibers. 4,448,917, Cl. 524-160.000.
Blakely, Bill W.; and Reece, Robert. Tunable bass-tone device. 4,448,103, Cl. 84-1.010.
Blanchard, Jean F.; and Lauserre, Pierre P., to Sanofi. Use of MS salt in geriatric medicine. 4,448,779, Cl. 424-263.000.
Blankenhorn, David H.: *See*—
Brooks, Samuel H.; Crawford, Donald W.; Selzer, Robert H.; and Blankenhorn, David H., 4,448,200, Cl. 128-653.000.
Blanquart, Philippe. Machine for applying a film. 4,448,630, Cl. 156-514.000.
Blau, Frederick, Jr.; and Gross, John M., to Fluidmaster, Inc. Method and apparatus for controlled off peak load hot water heating. 4,449,178, Cl. 364-148.000.
Bleile, Dennis M.; Allen, Diane M.; Tanaka, Steve K.; and Matarrese, Francis J., Jr., to Bio-Rad Laboratories, Inc. Compositions and method for correcting temperature dependence of hemoglobin assays. 4,448,888, Cl. 436-67.000.
Blodgett, Richard E.; and Furedi, Ervin J., to Furedi, Ervin J. Ratchet wrench. 4,448,095, Cl. 81-57.290.
Blomdahl, Sven G. R. Apparatus for sensing the distance between an object of electrically conductive material and a reference point. 4,449,030, Cl. 219-124.340.
Board, Kenneth, to National Research Development Corporation. Semi-conductor barrier switching devices. 4,449,140, Cl. 357-7.000.
Board of Trustees, Leland Stanford, Jr. University: *See*—
Sherby, Oleg D.; Oyama, Toshimasa; and Wadsworth, Jeffrey, 4,448,613, Cl. 148-12.00R.
Bockemuehl-Simon, Johannes J.: *See*—
Petsching, Helmut; Kremer, Walter; Bernhardt, Rainer; and Bockemuehl-Simon, Johannes J., 4,448,365, Cl. 242-71.800.
Boden, Richard M., to International Flavors & Fragrances Inc. Branched ketones, organoleptic uses thereof and process for preparing same. 4,448,713, Cl. 252-522.00R.
Bodig, Bernd; Hohne, Gerd; and Kalkhof, Bernd, to Robert Bosch GmbH. Ignition system for an internal combustion engine. 4,448,180, Cl. 123-618.000.
Boeing Company, The: *See*—
Herndon, Gerald F., 4,448,375, Cl. 244-216.000.
Klees, Garry W., 4,448,019, Cl. 60-204.000.
Larson, Robert J., 4,448,372, Cl. 244-87.000.
Bognar, Daniel; and Kuhnert, Friedrich, to Miller-Johannisberg Druckmaschinen GmbH. Inker for printing presses. 4,448,126, Cl. 101-363.000.

Bohlen, Harald; Greschner, Johann; and Nehmiz, Peter, to International Business Machines Corporation. Shadow projection mask for ion implantation and ion beam lithography. 4,448,865, Cl. 430-5.000.

Bohner, Beat, to Ciba-Geigy Corporation. Chlorosulfonyl urea triazines. 4,448,959, Cl. 544-213.000.

Boldt, John: *See*—
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Boliden Aktiebolag: *See*—
Petersson, Stig A., 4,447,963, Cl. 34-12.000.

Bolton, Joseph A.; and Feehery, George R., to Albany International Corp. Moisture control system for controlling the amount of chemical added to a fabric. 4,447,924, Cl. 8-151.000.

Bond, Michael E.; and Taylor, Harry E., to USM Corporation. Setting tool for wall anchor. 4,447,923, Cl. 7-165.000.

Bopp, Richard C.; Golba, Joseph C., Jr.; and White, Scott A., to General Electric Company. Blends of polyetherimides and block poly(esteramides). 4,448,937, Cl. 525-432.000.

Borg-Warner Corporation: *See*—
Marsi, Joseph A., 4,448,428, Cl. 277-92.000.

Bosak, Shannon: *See*—
Bergman, Clark; Vergason, Gary E.; Clark, Robert; and Bosak, Shannon, 4,448,799, Cl. 427-37.000.

Bosch-Siemens Hausgerate: *See*—
Reichert, Rudolf; and Haftlmeier, Theo, 4,448,464, Cl. 312-214.000.

Bose, Debasis; Datta, Amitava; and DeCristofaro, Nicholas J., to Allied Corporation. Nickel based brazing filler metals. 4,448,618, Cl. 148-403.000.

Bose, Debasis; Datta, Amitava; and DeCristofaro, Nicholas J., to Allied Corporation. Homogeneous low melting point copper based alloys. 4,448,851, Cl. 428-606.000.

Bose, Debasis; Datta, Amitava; and DeCristofaro, Nicholas J., to Allied Corporation. Homogeneous low melting point copper based alloys. 4,448,852, Cl. 428-606.000.

Bose, Karlheinz: *See*—
Brummer, Hans J.; Bose, Karlheinz; Knothe, Frank; Keller, Hans-Hermann; and Wallentowitz, Henning, 4,448,441, Cl. 280-691.000.

Boston University, Trustees of: *See*—
Catsimpoolas, Nicholas, 4,448,150, Cl. 119-1.000.

Bott, John A. Combination of permanent luggage carrier adapters with selected and removable primary luggage carriers. 4,448,336, Cl. 224-309.000.

Bouvet, Jean-Marie: *See*—
Bariol, Roger; Lecomte, Jackie; and Bouvet, Jean-Marie, 4,448,082, Cl. 73-861.050.

BP Chemicals Limited: *See*—
Foster, Brian R.; and Woodfin, William T., 4,448,644, Cl. 203-37.000.

Brabon, David L. Coffee refreshener. 4,448,113, Cl. 99-290.000.

Bradbury, Ronald C.: *See*—
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Braithwaite, David; and Jones, Stanley P., to Emhart Industries, Inc. Mould opening and closing mechanism. 4,448,600, Cl. 65-360.000.

Brandenstein, Manfred; Walter, Lothar; Olschewski, Armin; Huber, Wolfgang; and Friedrich, Wolfgang, to SKF Kugellagerfabriken GmbH. Clutch release bearing having vibration damping material. 4,448,294, Cl. 192-30.00V.

Brantingham, George L., to Texas Instruments Incorporated. Speech synthesis system with parameter look up table. 4,449,233, Cl. 381-53.000.

Brault, Bernard; and Marchal, Paul H., to Societe Anonyme dite: Air Industrie. Process and device for molding and drying objects made of fibrous materials. 4,448,640, Cl. 162-218.000.

Braun Aktiengesellschaft: *See*—
Hoffmann, Harald; and Raducanu, Dan-Corneliu, 4,449,086, Cl. 318-696.000.

Bray, Steven C., to General Electric Company. Process and apparatus for drying with latent heat recovery. 4,447,965, Cl. 34-27.000.

Breakey, Gerald A.: *See*—
Wilks, Robert S.; Sternheim, Eliezer; Breakey, Gerald A.; Sturges, Robert H., Jr.; Taleff, Alexander; and Castner, Raymond P., 4,448,680, Cl. 209-564.000.

Breeden, John W., to Cuisinarts, Inc. Rotary slicing tool for a food processor. 4,448,100, Cl. 83-355.000.

Bremer, Noel J.; Dria, Dennis E.; and Weber, Andrew M., to Standard Oil Company, The. Preparation of improved mixed vanadium phosphorus oxide catalyst and their use in oxidation processes. 4,448,893, Cl. 502-209.000.

Brennan, Michael E., to Texaco Inc. Preparation of linear polyethylenepolyamines with an aluminum phosphate catalyst. 4,448,997, Cl. 564-479.000.

Brentham, Jerry D. Exercising device with double acting hydraulic cylinder. 4,448,412, Cl. 272-130.000.

Breton, Ernest J.: *See*—
Barnwell, James W.; and Breton, Ernest J., 4,448,757, Cl. 423-247.000.

Brezinsky, Richard H., to Dow Chemical Company, The. Plastic/metal laminates, cable shielding or armoring tapes, and electrical cables made therewith. 4,449,014, Cl. 174-107.000.

Briccetti, Mario F., to Carrier Corporation. Thermostat self-test apparatus and method. 4,448,033, Cl. 62-126.000.

Bridges, William F., to United States of America, Air Force. Three-wire static strain gage apparatus. 4,448,078, Cl. 73-766.000.

Bright of America: *See*—
Hodgson, Dale A., 4,448,310, Cl. 206-526.000.

Bright, Robert G., to Draftex Development AG. Hollow reinforced sealing strips. 4,448,430, Cl. 277-184.000.

Bristol-Myers Company: *See*—
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British Gas Corporation: *See*—
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British Petroleum Company Limited, The: *See*—
Critchlow, Keith B., 4,448,623, Cl. 156-169.000.

British Telecommunications: *See*—
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Brochman, Wilfred R., to Minnesota Mining and Manufacturing Company. Easy opening tape closure for beverage container. 4,448,326, Cl. 220-270.000.

Brochu, Henry D. Pillow apparatus. 4,447,922, Cl. 5-434.000.

Brockmann, Eugen: *See*—
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Brodbeck, Hans; and Gallati, Harald, to Hoffmann-La Roche Inc. Stabilized peroxidase compositions. 4,448,882, Cl. 435-188.000.

Brookfield, David A. Viscometer with a continuously variable electronic readout. 4,448,061, Cl. 73-59.000.

Brooks, Martin F.: *See*—
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Brooks, Samuel H.; Crawford, Donald W.; Selzer, Robert H.; and Blankenhorn, David H., to University of Southern California. System and method for dynamic background subtraction. 4,448,200, Cl. 128-653.000.

Brosy, Jacques: *See*—
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Brousseau, Denise: *See*—
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Broussely, Michel, to Societe Anonyme dite: GIPELEC. Lithium - manganese dioxide cell. 4,448,864, Cl. 429-194.000.

Brown, Clyde O.: *See*—
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Brown, Jonathan G.: *See*—
Stohlquist, Roger H.; Brown, Jonathan G.; and Baker, Kenneth V., 4,448,010, Cl. 53-450.000.

Brown, Michael J.: *See*—
Liu, Kou-Chang; and Brown, Michael J., 4,448,982, Cl. 560-21.000.

Brown, William W., Jr.; Dahlke, Gerhard P.; and Lupul, Francis T., to International Business Machines Corporation. Apparatus for removably mounting and supplying mechanical and electrical energy to a vacuum chamber substrate holder. 4,448,149, Cl. 118-500.000.

Broyden, Robert H., to Columbus McKinnon Corporation. Pneumatic powered hoist. 4,448,397, Cl. 254-360.000.

Bruderer, Hans; Fischli, Albert E.; and Pfister, Rudolf, to Hoffmann-La Roche Inc. Cyclohexene derivatives. 4,448,991, Cl. 564-171.000.

Brummer, Hans J.; Bose, Karlheinz; Knothe, Frank; Keller, Hans-Hermann; and Wallentowitz, Henning, to Daimler-Benz Aktiengesellschaft. Independent front axle suspension for passenger cars. 4,448,441, Cl. 280-691.000.

Brunet, George A.; and Cowan, Richard J., to Acrometal Products, Inc. Curing oven for enameled wire and control system therefor. 4,448,578, Cl. 432-72.000.

Brunner, Bernhard: *See*—
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Brunner, Kurt: *See*—
Fischer, Melch; and Brunner, Kurt, 4,448,853, Cl. 428-607.000.

Brunswick Corporation: *See*—
Puryear, John W., 4,448,367, Cl. 242-84.20A.

Brus, Louis E.; and Rossetti, Ronald, to Bell Telephone Laboratories, Incorporated. Reflective containment of electromagnetic radiation in matrix isolation thin films. 4,448,524, Cl. 356-36.000.

Bruyninckx, Alphonse E.; Brooks, Martin F.; and Thorpe, David, to Imperial Chemical Industries PLC. Modified isocyanate compositions, their production and uses for polyurethane manufacture. 4,448,938, Cl. 525-457.000.

Bryant, Bernard J., to Sumar Corporation. Preparation of monospecific male-specific antibody and the use thereof for increasing the percentage of mammalian offspring of either sex. 4,448,767, Cl. 424-85.000.

BSD Medical Corporation: *See*—
Turner, Paul F., 4,448,198, Cl. 128-422.000.

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Tabler, Charles P., 4,448,296, Cl. 193-35.00C.

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Bulman Products, Inc.: *See*—
Templeton, John G., 4,448,101, Cl. 83-374.000.

Burack, Robert D.: *See*—
Kochka, Edgar L.; Burack, Robert D.; and Pfeiffer, Kenneth E., 4,448,343, Cl. 228-205.000.

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Siegel, Marvin I., 4,448,783, Cl. 424-273.00P.

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Buxton, Keith, to Metal Box Limited. Monitoring circuits for electrical welding apparatus. 4,449,028, Cl. 219-109.000.

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Binfare, Francesco, 4,448,378, Cl. 248-188.700.

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Spiegelberg, Ulf, 4,447,933, Cl. 17-41.000.

Cafes Collet: *See*—
Platel, Charles, 4,449,243, Cl. 383-103.000.

California Institute of Technology: *See*—
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Adams, Frederick J., 4,448,088, Cl. 74-422.000.

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Fulde, Roland C.; and Kwis, Stanley H., 4,448,791, Cl. 426-94.000.

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Hampson, Alfred A.; and Hutchins, Thomas B., deceased, 4,449,042, Cl. 235-464.000.

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Fukuda, Tadaji; and Nishigaki, Yuji, 4,448,801, Cl. 427-39.000.
Hirayama, Kazuhiro; Sato, Yasushi; Mochizuki, Noritaka; and Masaki, Katsumi, 4,448,513, Cl. 355-8.000.
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Ishiwata, Junichi, 4,449,057, Cl. 307-43.000.
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Kageyama, Masahide; and Fujita, Takeshi, 4,448,798, Cl. 427-8.000.
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Yamamoto, Hironori, 4,448,460, Cl. 308-5.00R.

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Lollis, Glen R.; Marler, Marvin G.; Car, Joe P.; and John, Sam J., 4,448,340, Cl. 228-29.000.

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Freermann, Johannes, 4,448,138, Cl. 112-147.000.

Carl Still GmbH & Co. K.G., Firma: *See*—
Lucas, August, 4,448,641, Cl. 201-41.000.
Lucas, August, 4,448,642, Cl. 202-263.000.

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Muller, Ortwin; Biber, Klaus; Jakubowski, Heinz; and Hanemann, Gerhard, 4,448,498, Cl. 350-516.000.

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Angevine, Philip J.; Carroll, Michael B.; Shih, Stuart S.; and Tabak, Samuel A., 4,448,672, Cl. 208-86.000.

Carson Alexion Corporation: *See*—
Rotolante, Ralph A.; and Koehler, Toivo, 4,449,044, Cl. 250-211.00J.

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Johnson, Leopold J.; and Carson, David L., 4,449,068, Cl. 310-316.000.

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Case, Richard V., to Midland Certified Reagent Company, The. Method of making lyophilized terminal deoxynucleotidyl transferase. 4,448,883, Cl. 435-194.000.

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Hoshii, Toshifumi, 4,448,104, Cl. 84-1.010.
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Wilks, Robert S.; Sternheim, Eliezer; Breakey, Gerald A.; Sturges, Robert H., Jr.; Taleff, Alexander; and Castner, Raymond P., 4,448,680, Cl. 209-564.000.

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Caudy, Don W.: *See*—
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Cavazza, Roberto, to SASIB S.p.A. Roll diameter sensing device. 4,447,957, Cl. 33-172.00F.

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Weindel, David; and Cederholm, Carl, 4,448,413, Cl. 273-1.0GB.

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Sharp, Joseph F., 4,449,166, Cl. 362-149.000.

Celanese Corporation: *See*—
Choe, Eui W.; and Conciatori, Anthony B., 4,448,954, Cl. 528-207.000.
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Andrews, Edward W.; Celek, John E.; Morse, Royal R., III; and Bergholz, Eugene W., 4,449,195, Cl. 364-900.000.

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Hervieu, Rene , 4,448,145, Cl. 114-312.000.

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Grellet, Bernard; Emmanuel, Jean-Pierre; and Sipp, Bernard, 4,448,611, Cl. 148-6.110.

Centro Ricerche Fiat S.p.A.: *See*—
Milana, Emilio, 4,448,527, Cl. 356-237.000.

Champion International Corporation: *See*—
Roccaforte, Harry I.; and Scott, Raymond G., 4,448,309, Cl. 206-525.000.
Chang, Hao-Jan; and Nishimura, Akihiro, to Ampex Corporation. Radiation-cured magnetic media and process for making same. 4,448,846, Cl. 428-412.000.
Chang, John C. H.; and Dimitriou, Theodore, to Wallace Computer Services, Inc. Pressure-sensitive record system. 4,448,445, Cl. 346-206.000.
Chao, Shun-lung; and Vining, Richard A., to ECD-ANR Energy Conversion Company. Thermoelectric systems incorporating rectangular heat pipes. 4,448,028, Cl. 62-3.000.
Chauvel, Bernard: *See*—
Reeb, Roland; and Chauvel, Bernard, 4,448,923, Cl. 524-460.000.
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Welsh, Jay Y.; DeCraene, Denis F.; and Sochol, Irving, 4,448,760, Cl. 423-605.000.
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Gatzschmann, Horst; Bertels, Herbert; Hafner, Hubertus; and Schmid, Alfred, 4,448,836, Cl. 428-164.000.
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Cheron, Jacques: *See*—
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Cheung, Harry, to Union Carbide Corporation. Split column multiple condenser-reboiler air separation process. 4,448,595, Cl. 62-31.000.
Cheung, Mo-Fung; Garrett, David L., Jr.; and van Oene, Henk, to Ford Motor Company. Resin binder for fiber composite materials. 4,448,941, Cl. 525-528.000.
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Wallman, P. Henrik, 4,448,666, Cl. 208-11.00R.
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Jackowski, Ronald A.; and Peisker, Glenn W., 4,448,426, Cl. 277-37.000.
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Uesugi, Toshiaki; Ogitani, Kazutaka; and Inden, Toshikazu, 4,449,129, Cl. 346-61.000.
Chiou, Jackson K.: *See*—
Lee, Kung-You; Chiou, Jackson K.; and McMahon, Matthew A., 4,448,822, Cl. 427-430.100.
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Terrell, Christopher, 4,448,863, Cl. 429-178.000.
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Ikegami, Tadao; and Miyamoto, Takeshi, 4,448,664, Cl. 204-286.000.
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Chow, Peter E. K., to Northern Telecom Limited. Surge protection for signal transmission systems. 4,449,157, Cl. 361-56.000.
Christian, George: *See*—
Clark, Norman R.; and Christian, George, 4,448,417, Cl. 273-121.00A.
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Trezise, Richard; Boldt, John; and Gautzman, Keith, 4,448,556, Cl. 400-208.000.
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Chu, Pochen, to Mobil Oil Corporation. Silico-crystal ZSM-48 method of preparing same and catalytic conversion therewith. 4,448,675, Cl. 208-118.000.
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Chung, Hun H. Centering device. 4,447,956, Cl. 33-172.00D.
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Ciabo, Renzo. People rescue device. 4,448,284, Cl. 182-234.000.
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Kristinsson, Haukur, 4,448,968, Cl. 548-136.000.
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Schwander, Hansrudolf, 4,448,719, Cl. 260-152.000.
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Stepp, Elvin D.; and Claypoole, Gary L., 4,449,237, Cl. 381-93.000.
Cipolla, Thomas M., to General Electric Company. Versatile gripping device. 4,448,405, Cl. 269-32.000.
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Hashimoto, Shingo; and Sekine, Mitsuo, 4,448,549, Cl. 374-170.000.
Civardi, Frank P., to Milliken Research Corporation. Leatherlike fabrics. 4,448,831, Cl. 428-91.000.
CL Industries, Inc.: *See*—
Kelley, Brian D.; and Stewart, Patrick H., 4,448,234, Cl. 164-16.000.
Claber S.p.A.: *See*—
Roman, Gianfranco, 4,448,355, Cl. 239-526.000.
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Rhodes, Russell H.; Smith, James S.; and Clare, Leslie P., 4,448,606, Cl. 75-236.000.
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Asai, Ryuichi; Okamoto, Takeshi; and Minagawa, Shoichi, 4,449,107, Cl. 333-150.000.
Sato, Yasuo; and Sakai, Takamasa, 4,449,141, Cl. 357-14.000.
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Clark, James H., to Leland Stanford Junior University, The Board of Trustees of the. Geometric processing system utilizing multiple identical processors. 4,449,201, Cl. 364-900.000.
Clark, Jean B., executrix: *See*—
Konrad, Charles E.; and Clark, Robert C., deceased, 4,449,080, Cl. 318-139.000.
Clark, Norman R.; and Christian, George, to Bally Manufacturing Corporation. Pinball game with simulated projectile display. 4,448,417, Cl. 273-121.00A.
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Clark, Robert C., deceased: *See*—
Konrad, Charles E.; and Clark, Robert C., deceased, 4,449,080, Cl. 318-139.000.
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Barby, Donald; Clarke, David E.; Lloyd, John; and Haq, Zia, 4,448,704, Cl. 252-91.000.
Claypoole, Gary L.: *See*—
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Clerc, Jean F.; and Robert, Jacques, to Commissariat a l'Energie Atomique. Matrix display device. 4,449,125, Cl. 340-752.000.
Clifford, Brad W. Multi-colored liquid crystal display device. 4,448,823, Cl. 428-1.000.
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Coblenz, Rolf; Schulte, Klaus; Ebeling, Wilfried; and Evertz, Dieter, to Bayer Aktiengesellschaft. Method and a device for the production of a reaction mixture from flowable foam-forming or solid-forming components. 4,448,902, Cl. 521-99.000.
Cockrell, Star D.: *See*—
Jones, Larry L., Jr.; and Cockrell, Star D., 4,448,384, Cl. 248-443.000.
Cogez, Jean, to Essilor International (Compagnie Generale d'Optique). Eye glasses for experimentation and testing. 4,448,501, Cl. 351-128.000.
Cogliano, Joseph A., to W. R. Grace & Co. Construction barrier board. 4,448,830, Cl. 428-40.000.
Cohen, Abraham D., to Exxon Research & Engineering Co. Zeolite L catalyst for reforming. 4,448,891, Cl. 502-74.000.
Cohen, Robert. Adjustable vehicle safety light. 4,449,167, Cl. 362-269.000.
Coldren, Daniel R., to AMP Incorporated. Receptacle terminal having latching feature. 4,448,468, Cl. 339-74.00R.
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Coleman Company, Inc., The: *See*—
Pollard, Jerry B., 4,448,142, Cl. 114-39.000.
Coleman, Ernest A.; Cronin, Kevin J.; Chu, Frank K.; and Kirwan, Robin W., to Dart Industries Inc. Fast crystallizing polyethylene terephthalate compositions. 4,448,913, Cl. 523-455.000.
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Gray, Frederick W., 4,448,705, Cl. 252-102.000.
Morton, Anthony J., 4,448,766, Cl. 424-52.000.
Collins, Bobby W. Flutter lift for torque wrench. 4,448,096, Cl. 81-57.390.
Collmann, Wilhelm. Vehicle wheel testing or inspection systems. 4,449,226, Cl. 378-58.000.
Colman, Geoffrey; and Russell, Roy R. B., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Social Services in Her Britannic Majesty's Government of the. Protection against dental caries. 4,448,768, Cl. 424-92.000.
Colson, Eugene J., to N.V. Transworld Marine Agency CY S.A., naamloze vennootschap. Self-locking sling. 4,448,451, Cl. 294-74.000.
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Miller, Robert J., 4,448,153, Cl. 123-25.00J.
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Turro, Nicholas J., 4,448,657, Cl. 204-155.000.
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Broyden, Robert H., 4,448,397, Cl. 254-360.000.

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Comfort, Yacov. Knockdown suitcase. 4,448,292, Cl. 190-107.000.

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Clerc, Jean F.; and Robert, Jacques, 4,449,125, Cl. 340-752.000.

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Magnenet, Jean, 4,449,132, Cl. 346-74.700.

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Binder, Jean-Jacques; and Magnenet, Jean G., 4,449,160, Cl. 360-104.000.
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Bernhardt, Lutz; and Kochert, Wilfried, 4,449,239, Cl. 382-9.000.

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Peterson, Marvin L.; and Hein, Norman W., Jr., 4,448,062, Cl. 73-86.000.

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Degani, Iacopo; Fochi, Rita; and Regondi, Valeria, 4,449,004, Cl. 568-38.000.

Contact Systems, Inc.: *See*—
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Helms, Charles R., 4,448,345, Cl. 229-43.000.

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Carlson, Douglas M.; Ohman, Randall L.; and Thorndyke, Lloyd M., 4,449,164, Cl. 361-384.000.

Cook, Albert M.: *See*—
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Cooke, Claude E., Jr.; and Robinson, Leon H., to Exxon Production Research Co. Method of freeing a hollow tubular member. 4,448,250, Cl. 166-255.000.

Cooper, Dale L.: *See*—
Vicino, Robert K.; Cooper, Dale L.; Pembleton, Lauren M.; and Allen, Constance C., 4,447,974, Cl. 40-538.000.

Cooper Industries, Inc.: *See*—
Vincent, Robert R., 4,448,262, Cl. 173-16.000.

Cooper, LaDreau V. Cartridge magazine mount. 4,447,976, Cl. 42-49.00A.

Cordes, Charles P. Drum construction. 4,448,105, Cl. 84-413.000.

Corniea, Donald G.: *See*—
Pankratz, Lawrence A.; and Corniea, Donald G., 4,448,008, Cl. 53-202.000.

Corso, Anthony J., to American Hoechst Corporation. Stable aqueous liquid composition of reactive dyes containing β-sulfatoethylsulfonyl groups. 4,448,583, Cl. 8-527.000.

Cosden Technology, Inc.: *See*—
Schwarz, Richard A., 4,448,900, Cl. 521-57.000.

Costrini, Renato: *See*—
Cattani, Luciano; and Costrini, Renato, 4,448,771, Cl. 424-180.000.

Coutsouradis, Dimitri: *See*—
Radtke, Schrade F.; Coutsouradis, Dimitri; and Pelerin, Jacques, 4,448,748, Cl. 420-514.000.

Covert, Douglas J.: *See*—
Kung, Roger I.; Flannagan, Stephen T.; Spitz, Jonathan N.; Pelley, Perry H., III; Riley, Robert S.; and Covert, Douglas J., 4,449,207, Cl. 365-230.000.

Cowan, Richard J.: *See*—
Brunet, George A.; and Cowan, Richard J., 4,448,578, Cl. 432-72.000.

Crafco, Inc.: *See*—
Jacobson, Carl C., Jr.; and Manning, Mark C., 4,448,352, Cl. 239-125.000.

Cragoe, Edward J., Jr.; Rooney, Clarence S.; and Williams, Haydn W. R., to Merck & Co., Inc. 4-Naphthyl and substituted naphthyl-3-hydroxy-3-pyrroline-2,5-diones and their use as inhibitors of glycolic acid oxidase. 4,448,786, Cl. 424-274.000.

Craig, Gary J., to Geosource Inc. Apparatus and method for testing a geophone during assembly. 4,448,057, Cl. 73-1.0DV.

Crain, Frank M. Tug boat cover rolling apparatus. 4,448,224, Cl. 114-242.000.

Craven, Penelope C.: *See*—
Benisek, Ladislav; and Craven, Penelope C., 4,448,817, Cl. 427-412.000.

Crawford, Charles D.: *See*—
Keller, Alex J.; Williams, Joseph R.; Fechner, Erhard A.; Pinto, Akiva; King, James A., Jr.; Crawford, Charles D.; and Maness, Riley C., 4,448,272, Cl. 177-1.000.

Crawford, Donald W.: *See*—
Brooks, Samuel H.; Crawford, Donald W.; Selzer, Robert H.; and Blankenhorn, David H., 4,448,200, Cl. 128-653.000.

Crawford, George M.: *See*—
Crawford, Russell C., III; Crawford, George M.; and Crawford, Russell C., Jr., 4,448,267, Cl. 175-218.000.

Crawford, Russell C., Jr.: *See*—
Crawford, Russell C., III; Crawford, George M.; and Crawford, Russell C., Jr., 4,448,267, Cl. 175-218.000.

Crawford, Russell C., III; Crawford, George M.; and Crawford, Russell C., Jr. Door drilling Kelly. 4,448,267, Cl. 175-218.000.

Cretin, Jacques: *See*—
Rialan, Joseph; and Cretin, Jacques, 4,449,120, Cl. 340-347.0AD.

Creusot-Loire: *See*—
Voillot, Herve , 4,448,299, Cl. 198-457.000.

Crisp, Richard D.: *See*—
Eckert, Kim; Crisp, Richard D.; and Ta, Lam, 4,449,064, Cl. 307-473.000.

Critchlow, Keith B., to British Petroleum Company Limited, The. Wetted filament dispenser and winding therewith. 4,448,623, Cl. 156-169.000.

Critikon, Inc.: *See*—
Kratochvil, Jiri; Ho, Nelson; and Janata, Jiri, 4,449,011, Cl. 174-52.0PE.

Crocker, Zenas, to Synergistics Chemicals Ltd. Process for producing foamed plastic articles. 4,448,738, Cl. 264-54.000.

Cronce, Gary M., to Masco Corporation. Article carrier. 4,448,337, Cl. 224-321.000.

Cronin, Kevin J.: *See*—
Coleman, Ernest A.; Cronin, Kevin J.; Chu, Frank K.; and Kirwan, Robin W., 4,448,913, Cl. 523-455.000.

Cross, Peter E.; and Dickinson, Roger P., to Pfizer Inc. N-Benzylimidazoles as selective inhibitors of the thromboxane synthetase enzyme. 4,448,781, Cl. 424-269.000.

Crossett, Joseph A., III; and Hartmann, Paul R., to Rockwell International Corporation. Digital modulation quality monitor. 4,449,222, Cl. 375-10.000.

Crounse, Nathan N., to Hilton-Davis Chemical Co., The. Phthalocyanines. 4,448,722, Cl. 260-245.100.

Crow, Robert W.: *See*—
Speegle, Steven C.; Schwendemann, Kenneth L.; Vinzant, Michael B.; Crow, Robert W.; and Mondon, Cary G., 4,448,216, Cl. 137-630.000.

Cubic Western Data: *See*—
Kelly, Guy M.; Roes, John B.; Walker, Samuel B.; and Beach, Bruce A., 4,449,186, Cl. 364-407.000.

Cuisinarts, Inc.: *See*—
Breeden, John W., 4,448,100, Cl. 83-355.000.

Cuisinarts Research & Development, Inc.: *See*—
Williams, James E., 4,448,360, Cl. 241-92.000.

Cummins Engine Company, Inc.: *See*—
Badgley, Patrick R.; and Rosselli, Andrew C., 4,448,169, Cl. 123-467.000.

Cunliffe, William J.; Eady, Elizabeth A.; and Holland, Keith T. Antibiotic polypeptide compounds prepared from staphlococcus bacteria. 4,448,714, Cl. 260-112.00R.

Cunningham, James L.; and Tatum, John M., to UOP Inc. Method of spot annealing tubing. 4,448,615, Cl. 148-13.000.

Cuomo, Jerome J.; DiStefano, Thomas H.; and Woodall, Jerry M., to International Business Machines Corporation. Photon energy conversion. 4,448,487, Cl. 350-164.000.

Currie, Richard A. Arithmetic instruction apparatus. 4,448,579, Cl. 434-203.000.

Curtis, Kenneth C.; and Densmore, John C., to Tuftco Corporation. Modular hook bar with gauge insert for tufting machine. 4,448,137, Cl. 112-79.00R.

Curtis, Robert G.: *See*—
Liakov, Nathan A.; Curtis, Robert G.; Favaloro, Caesar J.; and Pence, Geogory L., 4,449,223, Cl. 375-10.000.

Cuschera, Casper. Tamper-proof pop-up drain fitting. 4,447,918, Cl. 4-286.000.

Custom Creamery Systems, Inc.: *See*—
Mayer, David, 4,448,114, Cl. 99-494.000.

Cutler, John H.; D'Atre, John D.; and Walker, Loren H., to General Electric Company. Commutation failure correction scheme for a controlled current inverter. 4,449,088, Cl. 318-798.000.

Dahlke, Gerhard P.: *See*—
Brown, William W., Jr.; Dahlke, Gerhard P.; and Lupul, Francis T., 4,448,149, Cl. 118-500.000.

Daicel Chemical Industries, Ltd.: *See*—
Hiraishi, Masanori; and Sugata, Masashi, 4,448,637, Cl. 156-635.000.

Daigle, Ronald E., to Diasonics Cardio/Imaging, Ind. Ultrasound scan conversion and memory system. 4,449,199, Cl. 364-900.000.

Daimler-Benz Aktiengesellschaft: *See*—
Andres, Rudolf; Grantz, Helmut; Munzel, Wolf-Dietrich; and Odebrecht, Wolfgang, 4,448,241, Cl. 165-104.140.
Andres, Rudolf; Grantz, Helmut; Munzel, Wolf-Dietrich; and Odebrecht, Wolfgand, 4,448,242, Cl. 165-104.140.
Brummer, Hans J.; Bose, Karlheinz; Knothe, Frank; Keller, Hans-Hermann; and Wallentowitz, Henning, 4,448,441, Cl. 280-691.000.
Schuech, Siegmund; Nagele, Karl-Heinz; Jambor, Arno; and Sacco, Bruno, 4,447,928, Cl. 15-250.210.

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Nishida, Fumihiko; Yamanaka, Isamu; and Ijiri, Hiroshi, 4,448,518, Cl. 355-72.000.

Daishowa Seiki Co., Ltd.: *See*—
Tanaka, Yuzuru, 4,447,958, Cl. 33-174.00L.

D'Alessio, Lawrence M. Multi-channel laminar-flow fluid valve. 4,448,214, Cl. 137-625.460.

Damerau, Werner: *See*—
Burov, Vadim K.; Vanjuskin, Boris M.; Voskoboev, Anatolij E.; Kon'kov, Nikolaj G.; Orechov, Vsevolod D.; Pismannik, Konstantin D.; Svin'in, Michail P.; Fedotov, Michail I.; Damerau, Werner; Dulling, Achim; Heger, Adolf; Reichardt, Gerd; and Wilde, Gotthard, 4,448,048, Cl. 68-5.00E.

D'Amico, John J., to Monsanto Company. Benzthiazolyl-2-thioalkanoic nitriles. 4,448,399, Cl. 548-165.000.

Dan Mamtirim: *See*—
Livne, Zvi, 4,448,353, Cl. 239-205.000.

Dana Corporation: *See*—
Yarnell, James A., 4,448,094, Cl. 74-872.000.

Dang, Hiep D.; Beaver, Richard N.; Spillers, Frank W.; and Hazelrigg, Mark J., Jr., to Dow Chemical Company, The. Double L-shaped electrode for brine electrolysis cell. 4,448,663, Cl. 204-270.000.

Darlington, William B.: *See*—
DuBois, Donald W.; and Darlington, William B., 4,448,662, Cl. 204-252.000.

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Coleman, Ernest A.; Cronin, Kevin J.; Chu, Frank K.; and Kirwan, Robin W., 4,448,913, Cl. 523-455.000.

Darvial, Bruce L.; Heintz, Phillip L.; Smith, John S.; and Walth, Lee A. Fuel apparatus. 4,448,175, Cl. 123-557.000.

Dataproducts Corporation: *See*—
Fortescue, Stephen M., 4,449,117, Cl. 340-347.05Y.

Dataspeed, Inc.: *See*—
Fascenda, Anthony C.; Gregg, Daniel L.; and Ache, Rollin W., 4,449,114, Cl. 340-988.000.

D'Atre, John D.: *See*—
Cutler, John H.; D'Atre, John D.; and Walker, Loren H., 4,449,088, Cl. 318-798.000.

Datta, Amitava: *See*—
Bose, Debasis; Datta, Amitava; and DeCristofaro, Nicholas J., 4,448,618, Cl. 148-403.000.
Bose, Debasis; Datta, Amitava; and DeCristofaro, Nicholas J., 4,448,851, Cl. 428-606.000.
Bose, Debasis; Datta, Amitava; and DeCristofaro, Nicholas J., 4,448,852, Cl. 428-606.000.

Davidian, Michael, to Ameritek, Inc. Casket coating. 4,448,826, Cl. 428-35.000.

Davies, Thomas J., Jr., to Fairchild Camera & Instrument Corp. Trilevel input buffer. 4,449,065, Cl. 307-473.000.

Davis, Frances M.: *See*—
Smetana, Karel; Busch, Harris; Busch, Rose K.; Gyorkey, Ferenc; Gyorkey, Phyllis; and Davis, Frances M., 4,448,890, Cl. 436-508.000.

Davis, George T., deceased (by Davis, Maureen A., administratrix); and Hydro, William R., to United States of America, Army. Dehydrohalogenation process. 4,449,005, Cl. 568-59.000.

Davis, James C., to Dow Chemical Company, The. Liquid chromatographic method and apparatus with hollow fiber device for post-column derivatization. 4,448,691, Cl. 210-656.000.

Davis, Maureen A., administratrix: *See*—
Davis, George T., deceased; and Hydro, William R., 4,449,005, Cl. 568-59.000.

Daxinger, Helmut: *See*—
Buhl, Rainer; Moll, Eberhard; and Daxinger, Helmut, 4,448,802, Cl. 427-42.000.

Day, Joseph G.; and Taylor, Jeffrey R., to Matthey Rustenburg Refiners (Pty) Limited. Recovery of precious metals from leach residues. 4,448,604, Cl. 75-63.000.

Dayco Corporation: *See*—
Marsh, Richard L.; and Wetzel, Robert E., 4,448,621, Cl. 156-138.000.

Deborde, Albert H.; and Remond, Pierre L., to Saurer Diederichs (Societe Anonyme). Device comprising a movable nozzle for the pneumatic insertion of the weft in a shuttle-less loom. 4,448,223, Cl. 139-435.000.

Decor Doors Manufacturing Ltd.: *See*—
Lesosky, Thomas, 4,447,987, Cl. 49-468.000.

DeCraene, Denis F.: *See*—
Welsh, Jay Y.; DeCraene, Denis F.; and Sochol, Irving, 4,448,760, Cl. 423-605.000.

DeCristofaro, Nicholas J.: *See*—
Bose, Debasis; Datta, Amitava; and DeCristofaro, Nicholas J., 4,448,618, Cl. 148-403.000.
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Deering, Roland F., to Union Oil Company of California. Process for retorting oil shale with maximum heat recovery. 4,448,668, Cl. 208-11.00R.

Degani, Iacopo; Fochi, Rita; and Regondi, Valeria, to Consiglio Nazionale Delle Ricerche. Process for preparing organic sulphides. 4,449,004, Cl. 568-38.000.

Deinet, Adolph J.; and Woods, William B., to Nuodex Inc. Surface-coating compositions. 4,448,906, Cl. 523-122.000.

Dekker, Lambert: *See*—
Klemarczyk, Philip T.; Dekker, Lambert; and Kiwala, Jacob, 4,449,008, Cl. 568-353.000.

Delago, Pierre C., to American Hoist & Derrick Company. Heave motion compensation apparatus. 4,448,396, Cl. 254-340.000.

Delano, Ralph L.: *See*—
Reid, Walter L., Jr.; Van Stone, Robert A.; and Delano, Ralph L., 4,448,290, Cl. 188-82.700.

Delaunay, Jean, to Societe Anonyme DBA. Disc brake. 4,448,288, Cl. 188-73.450.

Delay, Francois, to Firmenich SA. Process for the preparation of cyclopentadec-4-ynone and of its 3-methyl homologue. 4,448,650, Cl. 204-59.00R.

Delery, Marc, to Compagnie Francaise d'Articles de Sport. Ski boot. 4,447,970, Cl. 36-121.000.

Delgado, Raul A., to Industria del Hierro, S.A. Drilling rig. 4,447,997, Cl. 52-120.000.

Delphax Systems: *See*—
Vandervalk, Casey S., 4,448,872, Cl. 430-126.000.

Deltech Engineering, Inc.: *See*—
Barnwell, James W.; and Breton, Ernest J., 4,448,757, Cl. 423-247.000.

DeLuca, Hector F.; Schnoes, Heinrich K.; and Morzycki, Jacek W., to Wisconsin Alumni Research Foundation. Hydroxyvitamin D_2 compounds and process for preparing same. 4,448,721, Cl. 260-239.500.

DeLuca, Hector F.; Schnoes, Heinrich K.; Paaren, Herbert E.; and Smith, Connie M., to Wisconsin Alumni Research Foundation. Ring A- and triene-modified vitamin D compounds. 4,448,726, Cl. 260-397.200.

Demuth, Hans; Kropp, Peter; and Noll, Karl, to Wieland-Werke AG. Heat-transmitting device for heat pumps. 4,448,244, Cl. 165-141.000.

DeMuth, Raymond W., to Teletype Corporation. Light source mounting bracket for a facsimile document scanner. 4,448,379, Cl. 248-201.000.

De Nicola, Anthony J., Jr.: *See*—
Bell, James P.; and De Nicola, Anthony J., Jr., 4,448,847, Cl. 428-413.000.

Dennis, Warren E.; and Plambeck, Eric D., to Casablanca Fan Company, Inc. Canopy assembly. 4,448,388, Cl. 248-663.000.

Densmore, John C.: *See*—
Curtis, Kenneth C.; and Densmore, John C., 4,448,137, Cl. 112-79.00R.

de Palezieux, Jacques, to Runtal Holding Company S.A. Radiator. 4,448,245, Cl. 165-174.000.

Dequasie, Andrew E.; and Ross, Sidney D., to Sprague Electric Company. AC Capacitor and impregnant therefor. 4,449,163, Cl. 361-315.000.

Dessau, Ralph M., to Mobil Oil Corporation. Selective sorption by zeolites. 4,448,671, Cl. 208-26.000.

Dewaegheneire, Gabriel, to Leuven Research & Development. Temperature responsive warning device. 4,448,147, Cl. 116-216.000.

DeWalk, Arnold R., to Tee Nee Trailer Company, The. Boat trailer with improved aft support cradle. 4,448,438, Cl. 280-414.100.

Dhillon, Major S.: *See*—
Walls, John E.; and Dhillon, Major S., 4,448,873, Cl. 430-157.000.

Diamond International Corporation: *See*—
Lord, Henry A.; Bixler, Kenneth D.; and Reifers, Richard F., 4,448,344, Cl. 229-2.5EC.

Diamond Shamrock Corporation: *See*—
Gauger, Jurgen F.; Hinden, Jean M.; and Katz, Michael, 4,448,803, Cl. 427-58.000.
Gestaut, Lawrence J.; and Simcox, P. David, 4,448,886, Cl. 435-262.000.

Diasonics Cardio/Imaging, Ind.: *See*—
Daigle, Ronald E., 4,449,199, Cl. 364-900.000.

Dickakian, Ghazi, to Exxon Research and Engineering Co. Aromatic pitch production from coal derived distillate. 4,448,670, Cl. 208-22.000.

Dickes, E. Jon, to Tektronix, Inc. Triangle waveform generator having a loop delay compensation network. 4,449,059, Cl. 307-228.000.

Dickinson, Roger P.: *See*—
Cross, Peter E.; and Dickinson, Roger P., 4,448,781, Cl. 424-269.000.

Diedrich, Bernd: *See*—
Berthold, Joachim; Diedrich, Bernd; Franke, Rainer; Hartlapp, Jurgen; Schafer, Werner; and Sirobel, Wolfgang, 4,448,944, Cl. 526-119.000.

Diery, Helmut; and Mees, Bernhard, to Hoechst Aktiengesellschaft. Addition products from triethanolamine condensation products and bisglycidyl ethers and their use. 4,448,992, Cl. 564-347.000.

Diesel Kiki Company, Ltd.: *See*—
Komada, Hideaki; Kojima, Yutaka; and Ohie, Tomonori, 4,448,168, Cl. 123-446.000.
Nakajima, Nobuyuki; and Hiruma, Katumi, 4,448,356, Cl. 239-533.500.
Takahashi, Seizi; and Aoki, Hachiro, 4,448,174, Cl. 123-502.000.

DiGiovanni, John; Vigh, Szabolcs M.; McVay, William P.; and Miksza, Anthony S., Jr., to Ethicon, Inc. Full stroke compelling mechanism for surgical instrument with drum drive. 4,448,194, Cl. 128-334.00R.
Digital Equipment Corporation: *See*—
Flahive, Barry J.; Grady, John J., III; and Rado, Peter J., 4,449,183, Cl. 364-200.000.
Rubinson, Barry L.; Gardner, Edward A.; Grace, William A.; Lary, Richard F.; and Keck, Dale R., 4,449,182, Cl. 364-200.000.
Dilks, Charles H., Jr.; Kirkland, Joseph J.; and Yau, Wallace W., to Du Pont de Nemours, E. I., and Company. Apparatus and method for sedimentation field flow fractionation. 4,448,679, Cl. 209-155.000.
DiMatteo, Paul, to Robotic Vision Systems, Inc. Arrangement for addressing rays or planes of light in space. 4,448,505, Cl. 353-122.000.
Dimitriou, Theodore: *See*—
Chang, John C. H.; and Dimitriou, Theodore, 4,448,445, Cl. 346-206.000.
Dingwall, Andrew G. F.; and Zazzu, Victor, to RCA Corporation. Switching circuitry as for a flash A/D converter. 4,449,118, Cl. 340-347.0AD.
Dinklage, Horst: *See*—
Fink, Herbert; Siol, Werner; Dinklage, Horst; and Rauch, Hubert, 4,448,945, Cl. 526-193.000.
Dischert, Robert A.; and Powers, Kerns H., to RCA Corporation. Transcodeable vertically scanned high-definition television system. 4,449,143, Cl. 358-11.000.
Disko, Harry: *See*—
Zaruba, John V.; and Disko, Harry, 4,448,421, Cl. 273-243.000.
DiStefano, Thomas H.: *See*—
Cuomo, Jerome J.; DiStefano, Thomas H.; and Woodall, Jerry M., 4,448,487, Cl. 350-164.000.
Distributeur Minute Inc.: *See*—
Millette, Germain; and Martin, Michel, 4,448,331, Cl. 222-181.000.
DMA Systems Corporation: *See*—
Meier, Markus; and Sutton, David A., 4,449,155, Cl. 360-104.000.
DMV-Campina B.V.: *See*—
Ternote, Frank A. A., 4,448,795, Cl. 426-471.000.
Dobler, Klaus; and Hachtel, Hansjorg, to Robert Bosch GmbH. Noncontacting shaft position sensor. 4,448,084, Cl. 73-862.330.
Doemen, Benno, to Papst Motoren KG. Compensating outputs of hall generators to minimize effects of temperature variation and the like. 4,449,081, Cl. 318-254.000.
Doherty, Robert. Variable venturi, variable volume, air induction input for an air conditioning system. 4,448,111, Cl. 98-38.00E.
Doi, Kanya: *See*—
Wakayama, Hideaki; Fujiwara, Jyunji; and Doi, Kanya, 4,449,021, Cl. 200-144.00B.
Dominguez, Domingo: *See*—
Cava, Michael P.; and Dominguez, Domingo, 4,448,724, Cl. 260-351.500.
Dominguez, Richard J. G., to Texaco Inc. Reaction injection molded elastomer using a methylene bis(phenylisocyanate) containing 2,4' isomer in amounts greater than about 10 percent. 4,448,904, Cl. 521-160.000.
Don Coburn, Inc.: *See*—
Carver, Robert G., 4,448,308, Cl. 206-426.000.
Donn Incorporated: *See*—
Worley, Robert F., 4,448,006, Cl. 52-488.000.
D'Onofrio, Anthony; and Gunzy, Jack, to Timex Corporation. Electroluminescent lamp driver. 4,449,075, Cl. 315-169.300.
Doriath, Gerard; Gaudry, Roger; and Hepner, Georges, to Thomson-CSF. Measuring head for magnetometer and magnetometer incorporating such a head. 4,449,096, Cl. 324-244.000.
Dorosz, Adolph S., to USM Corporation. Automatic thread changing sewing machine. 4,448,139, Cl. 112-221.000.
Doty, Warren R.; and Kinney, Timothy J., to OMI International Corporation. Oxidizing agent for acidic accelerator in electroless metal plating process. 4,448,811, Cl. 427-304.000.
Dougan, Donald R.; Larue, Albert D.; and Wolf, John J., to Babcock & Wilcox Company, The. Inline air-coal separator. 4,448,135, Cl. 110-263.000.
Dow Chemical Company, The: *See*—
Althouse, James W., III, 4,448,210, Cl. 137-2.000.
Brezinsky, Richard H., 4,449,014, Cl. 174-107.000.
Dang, Hiep D.; Beaver, Richard N.; Spillers, Frank W.; and Hazelrigg, Mark J., Jr., 4,448,663, Cl. 204-270.000.
Davis, James C., 4,448,691, Cl. 210-656.000.
Jakubowski, James J.; Meyer, Victor E.; and Pelletier, Ronald R., 4,448,845, Cl. 428-404.000.
Killat, George R.; and Conklin, Jerry R., 4,448,708, Cl. 252-344.000.
McLeod, David M., 4,448,540, Cl. 366-160.000.
Rubens, Louis C., 4,448,933, Cl. 525-123.000.
Spangenberg, Stanley F.; Finley, Arlington L.; and Searson, D. James, 4,448,654, Cl. 204-70.000.
Dow Corning Corporation: *See*—
Falender, James R.; and Saam, John C., 4,448,927, Cl. 524-860.000.
Plueddemann, Edwin P., 4,448,694, Cl. 210-682.000.
Dow Corning Limited: *See*—
Westall, Stephen, 4,448,810, Cl. 427-302.000.
Draftex Development AG: *See*—
Bright, Robert G., 4,448,430, Cl. 277-184.000.
Dravo Corporation: *See*—
Karnofsky, George B., 4,448,667, Cl. 208-11.0LE.
Dressel, Manfred; Greven, Johannes; Jeck, Arnulf; Magin, Rudolf; Nick, Gunther; Schaffarczyk, Paul; and Weiss, Guenther, to BASF Aktiengesellschaft. Process and apparatus for monitoring the formation and propagation of cracks in machine parts and components. 4,448,080, Cl. 73-799.000.
Dresser Industries, Inc.: *See*—
Fuller, Dennis D., 4,448,268, Cl. 175-228.000.
Dria, Dennis E.: *See*—
Bremer, Noel J.; Dria, Dennis E.; and Weber, Andrew M., 4,448,893, Cl. 502-209.000.
Driemeyer, Reinhold G. F., to NCR Canada Ltd - NCR Canada Ltee. Sheet feeding apparatus having an expansible periphery. 4,448,554, Cl. 400-124.000.
Drinkuth, Franz; von Bonin, Wulf; Schapel, Dietmar; and Lorenz, Artur, to Bayer Aktiengesellschaft. Aqueous preparation and its use in the production of ceramic compositions. 4,448,914, Cl. 524-32.000.
Drosen, Erich: *See*—
Kotai, Ferenc; Spotzl, Markus; Drosen, Erich; and Pongratz, Leo, 4,448,107, Cl. 89-36.00K.
DuBois, Donald W.; and Darlington, William B., to PPG Industries, Inc. Solid polymer electrolyte chlor-alkali electrolytic cell. 4,448,662, Cl. 204-252.000.
Duchane, David V.; and Barthell, Barry L., to United States of America, Energy. Composite polymeric film and method for its use in installing a very thin polymeric film in a device. 4,448,622, Cl. 156-155.000.
Duchene, Jean C., to Alsthom-Atlantique. Device for chocking an inverted type current transformer when transported on its side. 4,449,110, Cl. 336-94.000.
Duerksen, Walter K.; Googin, John M.; and Napier, Bradley, Jr., to United States of America, Energy. Aqueous cutting fluid for machining fissionable materials. 4,448,701, Cl. 252-49.300.
Dulling, Achim: *See*—
Burov, Vadim K.; Vanjushin, Boris M.; Voskoboev, Anatolij E.; Kon'kov, Nikolaj G.; Orechov, Vsevolod D.; Pismannik, Konstantin D.; Svin'in, Michail P.; Fedotov, Michail I.; Damerau, Werner; Dulling, Achim; Heger, Adolf; Reichardt, Gerd; and Wilde, Gotthard, 4,448,048, Cl. 68-5.00E.
Dumont, Bernard, to Feudor S.A. Method of filling disposable gas lighter and device for filling same. 4,448,226, Cl. 141-2.000.
Duncan, James W., to Stencel Aero Engineering Corporation. Deployment sequencer. 4,448,374, Cl. 244-150.000.
Dunstan, Phillip E. Heat pump system using wastewater heat. 4,448,347, Cl. 237-2.00B.
Dunwald, Willi: *See*—
Schulte, Bernhard; Jakob, Wolfgang; Dunwald, Willi; and Meyer, Karl-Heinrichrich, 4,448,942, Cl. 525-540.000.
Du Pont de Nemours, E. I., and Company: *See*—
Dilks, Charles H., Jr.; Kirkland, Joseph J.; and Yau, Wallace W., 4,448,679, Cl. 209-155.000.
Sogah, Dotsevi Y., 4,448,980, Cl. 556-446.000.
Durette, Philippe L., to Merck & Co., Inc. Chiral synthesis of thienamycin from D-gluocose. 4,448,976, Cl. 549-39.000.
Dusza, John P.; Joseph, Joseph P.; and Bernstein, Seymour, to American Cyanamid Company. Therapeutically active 3-substituted amino-1-phenyl and substituted phenyl-2-pyrazolines. 4,448,973, Cl. 548-362.000.
Dynamit Nobel Aktiengesellschaft: *See*—
Thewalt, Klaus; Bison, Gunter; and Egger, Heinz, 4,448,999, Cl. 564-495.000.
E. R. Squibb & Sons, Inc.: *See*—
Karanewsky, Donald S., 4,448,772, Cl. 424-200.000.
E. R. Wagner Mfg. Co.: *See*—
Mueller, Ralph W., 4,447,932, Cl. 16-21.000.
Eady, Elizabeth A.: *See*—
Cunliffe, William J.; Eady, Elizabeth A.; and Holland, Keith T., 4,448,714, Cl. 260-112.00R.
Earl, David C.: *See*—
Mongoven, Michael A.; Bees, Paul R.; and Earl, David C., 4,449,073, Cl. 315-130.000.
Early, Judson H.: *See*—
Off, Joseph W. A.; Early, Judson H.; Roady, Daniel K.; and Thayer, Theodore B., 4,448,626, Cl. 156-256.000.
Easco Corporation: *See*—
Orszulak, Stanley J., 4,448,564, Cl. 403-318.000.
Eastman Kodak Company: *See*—
Abel, Edward P., 4,448,874, Cl. 430-215.000.
Geyer, Frederick F.; and Leonard, Eric M., 4,449,139, Cl. 346-137.000.
Jessop, Thomas C., 4,448,335, Cl. 222-391.000.
Tschang, Pin-Seng, 4,449,153, Cl. 358-296.000.
Upson, Donald A.; and Steklenski, David J., 4,448,850, Cl. 428-510.000.
Eaton, Charles K.; Nolting, Eugene C.; and Norman, Thomas J., Jr., to BancTec, Inc. Encodable strip attachment apparatus. 4,448,631, Cl. 156-521.000.
Eaton Corporation: *See*—
Hillebrand, George A.; and Paar, Michael S., 4,448,155, Cl. 123-90.500.
Hoppie, Lyle O., 4,448,176, Cl. 123-558.000.
Ebeling, Wilfried: *See*—
Coblenz, Rolf; Schulte, Klaus; Ebeling, Wilfried; and Evertz, Dieter, 4,448,902, Cl. 521-99.000.
Eberhardt, H. Alfred; Hoffman, Kenneth F.; and Petersen, Raymond R., to Hale Fire Pump Company. Foam liquid proportioner. 4,448,256, Cl. 169-15.000.
Ebert, Chris W.; and Thall, Earle S., to RCA Corporation. Method of blackening surfaces of steel parts with wet nitrogen. 4,448,612, Cl. 148-6.350.

ECD-ANR Energy Conversion Company: *See—*
Chao, Shun-lung; and Vining, Richard A., 4,448,028, Cl. 62-3.000.
Eckberg, Richard P.: *See—*
Grenoble, Maurice E.; and Eckberg, Richard P., 4,448,815, Cl. 427-387.000.
Eckels, Robert Y. Panel system for slope protection. 4,448,571, Cl. 405-284.000.
Eckert, Kim; Crisp, Richard D.; and Ta, Lam, to Motorola, Inc. Three state output circuit. 4,449,064, Cl. 307-473.000.
Eckstein, Robert J.; and Mason, Roger L. Auxiliary power unit for vehicles. 4,448,157, Cl. 123-142.50R.
Edgar, Albert D., to International Business Machines Corp. Precompensated stroke cathode ray tube display system apparatus and method. 4,449,124, Cl. 340-739.000.
Edwards, Cyril K.; and Webb, Edward H., to Thomas Hunter Limited. Container closure. 4,448,325, Cl. 220-269.000.
Edwards, Donald K., to United States of America, Army. Heat-pipe-diode-charged thermal. 4,448,239, Cl. 165-47.000.
Edwin Cooper, Inc.: *See—*
O'Brien, Joseph P.; and Papay, Andrew G., 4,448,974, Cl. 548-550.000.
Egger, Heinz: *See—*
Thewalt, Klaus; Bison, Gunter; and Egger, Heinz, 4,448,999, Cl. 564-495.000.
Ehara, Kohei; Muramoto, Susumu; Morimoto, Takashi; Matsuo, Seitaro; and Itsumi, Manabu, to Nippon Telegraph and Telephone Public Corporation. Method for the manufacture of semiconductor device using refractory metal in a lift-off step. 4,448,800, Cl. 427-39.000.
Eisai Co., Ltd.: *See—*
Negi, Shigeto; Machida, Yoshimasa; Yamauchi, Hiroshi; Saito, Isao; Hasagawa, Yoshikazu; and Kawamura, Tamio, 4,448,775, Cl. 424-246.000.
Sato, Akio; Nakajima, Kenji; Takahara, Yoshimasa; Kijima, Shizumasa; Watanabe, Hideaki; Kawamura, Tamio; and Nagai, Yasushi, 4,449,002, Cl. 568-28.000.
Eisenstadt Company: *See—*
Weinzettel, Michael; and Weeks, Walter, 4,448,304, Cl. 206-223.000.
Ekern, Ronald J.: *See—*
Fleischer, Niles A.; and Ekern, Ronald J., 4,448,861, Cl. 429-105.000.
Eldredge, Peter G.: *See—*
Joseph, David A.; and Eldredge, Peter G., 4,448,532, Cl. 356-394.000.
Electric Power Research Institute, Inc.: *See—*
Schwab, James J.; and Tassicker, Owen J., 4,449,159, Cl. 361-230.000.
Electroade, Inc.: *See—*
Epting, Elmer E., Jr., 4,448,770, Cl. 424-153.000.
Elford, Howard L.: *See—*
van't Riet, Bartholomeus; Elford, Howard L.; and Wampler, Galen L., 4,448,730, Cl. 260-500.50H.
Eli Lilly and Company: *See—*
Bach, Nicholas J.; Kornfeld, Edmund C.; and Titus, Robert D., 4,448,990, Cl. 564-167.000.
Shuman, Robert T., 4,448,717, Cl. 260-112.50E.
Elias, Luis R.: *See—*
Smith, Todd I.; Elias, Luis R.; and Madey, John M. J., 4,449,219, Cl. 372-2.000.
Elkins, James H., to United States of America, Navy. Device for underwater cryogenic cutting. 4,447,952, Cl. 30-361.000.
Ellegaard, Peer. Releasable auxiliary wheel coupling mechanism. 4,448,455, Cl. 301-36.00R.
Elsner, Burckhard: *See—*
Becker, Kunibert; Kirchbrucher, Rudiger; and Elsner, Burckhard, 4,448,263, Cl. 173-34.000.
Eltgen, Jean-Jacques, to Compagnie Internationale pour L'Informatique CII-Honeywell Bull (Societe Anonyme). Process and machine for magnetographic printing (IV). 4,449,133, Cl. 346-74.700.
Emery, Donald B.; and Herring, William M., to Standard Oil Company (Indiana). Continuous in-line melt flow rate control system. 4,448,736, Cl. 264-40.100.
Emhart Industries, Inc.: *See—*
Braithwaite, David; and Jones, Stanley P., 4,448,600, Cl. 65-360.000.
Emmanuel, Jean-Pierre: *See—*
Greilet, Bernard; Emmanuel, Jean-Pierre; and Sipp, Bernard, 4,448,611, Cl. 148-6.110.
Endo, Haruo, to Mikuni Kogyo Kabushiki Kaisha. Carburetor. 4,448,280, Cl. 181-229.000.
Endo, Haruyoshi; Makimoto, Mitsuo; Kikuchi, Ko; and Yamashita, Sadahiko, to Matsushita Electric Industrial Company, Limited. Band-stop filter for VHF-UHF band. 4,449,108, Cl. 333-202.000.
Endo, Hiroshi: *See—*
Ishikawa, Yasuki; Endo, Hiroshi; Sone, Masazumi; and Imai, Iwao, 4,448,181, Cl. 123-620.000.
Energy Conversion Devices, Inc.: *See—*
Yu, Terry T., 4,448,877, Cl. 430-346.000.
Energy Modification, Inc.: *See—*
Gleim, William K. T., 4,448,676, Cl. 208-136.000.
Energy Products of Idaho: *See—*
Foote, Jerry B., 4,448,134, Cl. 110-245.000.
Engelbrecht, Hans-Christian; Kniss, Helmut; and Wessel, Wolf, to Robert Bosch GmbH. Method and apparatus for determining the injected fuel quantity in internal combustion engines. 4,448,067, Cl. 73-119.00A.
Engelhard Corporation: *See—*
Bartholic, David B., 4,448,674, Cl. 208-113.000.
Engelson, David, to Page Accessories, Inc. Belt. 4,447,913, Cl. 2-338.000.
Enomoto, Hiromu: *See—*
Ohmichi, Hitoshi; Enomoto, Hiromu; Yasuda, Yasushi; Mitono, Yoshiharu; and Imaizumi, Taketo, 4,449,063, Cl. 307-456.000.
Epting, Elmer E., Jr., to Electroade, Inc. Dietetic beverage. 4,448,770, Cl. 424-153.000.
Erdman, David M., to General Electric Company. Control system for an electronically commutated motor. 4,449,079, Cl. 318-138.000.
Erect-A-Tube, Inc.: *See—*
McQueen, Coy E.; and Twedt, Lynn O., 4,448,232, Cl. 160-207.000.
Ernst, William D., to Mechanical Technology Incorporated. Double angle seal forming lubricant film. 4,448,424, Cl. 277-30.000.
Erwin-Sick GmbH - Optik-Elektronik: *See—*
Krause, Gerhard, 4,448,529, Cl. 356-310.000.
Escamilla-Kelly, Ricardo. Upright game with insertable dice. 4,448,420, Cl. 273-241.000.
Escher Wyss GmbH: *See—*
Schnell, Hans; and Wenske, Rolf, 4,447,941, Cl. 29-121.100.
Espelage, Paul M.: *See—*
Lippitt, David L.; Espelage, Paul M.; Tupper, Leland C.; Walker, Loren H.; and Weiss, Herbert W., 4,449,087, Cl. 318-723.000.
Esselte Rendaflex Corporation: *See—*
Holland-Letz, Gunter, 4,448,122, Cl. 101-91.000.
Essilor International (Compagnie Generale d'Optique): *See—*
Cogez, Jean, 4,448,501, Cl. 351-128.000.
Ethicon, Inc.: *See—*
DiGiovanni, John; Vigh, Szabolcs M.; McVay, William P.; and Miksza, Anthony S., Jr., 4,448,194, Cl. 128-334.00R.
Ivanov, Konstantin, 4,448,193, Cl. 128-326.000.
Ethyl Corporation: *See—*
Hinkamp, James B.; and Hanlon, John V., 4,448,587, Cl. 44-57.000.
Weidig, Charles F., 4,448,586, Cl. 44-55.000.
Evans, David W., to United States of America, Air Force. Varying bandpass of optical spatial filter by rotating mirrors having changing reflectivity. 4,448,486, Cl. 350-162.120.
Evans, Derek K.: *See—*
Williamson, Eugene; Thompson, Stephen M.; and Evans, Derek K., 4,448,203, Cl. 128-733.000.
Evertz, Dieter: *See—*
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Ewing, Robert L., to Manville Service Corporation. Quick install device for mounting a luminaire. 4,449,168, Cl. 362-404.000.
Ex-Cell-O Corporation: *See—*
Kauffman, Ivan L.; and Allen, Robert J., 4,448,012, Cl. 53-563.000.
Expert Maschinenbau GmbH: *See—*
Moller, Reinfried, 4,448,093, Cl. 74-821.000.
Exxon Production Research Co.: *See—*
Cooke, Claude E., Jr.; and Robinson, Leon H., 4,448,250, Cl. 166-255.000.
Exxon Research & Engineering Co.: *See—*
Cohen, Abraham D., 4,448,891, Cl. 502-74.000.
Dickakian, Ghazi, 4,448,670, Cl. 208-22.000.
Lundberg, Robert D.; and Peiffer, Dennis G., 4,448,926, Cl. 524-612.000.
Moss, Gerald, 4,448,030, Cl. 62-79.000.
Zaczepinski, Sioma; Billimoria, Rustom M.; Tao, Frank; Lington, Christopher G.; and Plumlee, Karl W., 4,448,665, Cl. 208-8.0LE.
F. F. Seeley Nominees Pty. Ltd.: *See—*
Seeley, Frederic F., 4,448,213, Cl. 137-451.000.
Fabian, David J.: *See—*
Berry, Donald A.; and Fabian, David J., 4,448,471, Cl. 339-91.00R.
Fabian, Peter; and Heraeus Elektroden GmbH. Monitoring apparatus. 4,448,660, Cl. 204-225.000.
Fabricius, Hans-Ake; and Stahn, Roland, to Hooper Trading Company. High yield process for in vitro production of serum-free and mitogen-free interleukin-2. 4,448,879, Cl. 435-2.000.
Fabrique Nationale Herstal: *See—*
Gabriels, Andre J., 4,448,129, Cl. 102-487.000.
Fabris, Hubert J.: *See—*
Lenke, Gerd M.; Melby, Earl G.; and Fabris, Hubert J., 4,448,956, Cl. 528-312.000.
Factor, Arnold; and Sannes, Keith N., to General Electric Company. Color-stabilized halobisphenolethylene polycarbonates. 4,448,727, Cl. 260-463.000.
Fag Kugelfischer Georg Schafer & Co.: *See—*
Moller, Rainer; and Scharting, Gunter, 4,448,108, Cl. 89-37.00R.
Fairchild Camera & Instrument Corp.: *See—*
Davies, Thomas J., Jr., 4,449,065, Cl. 307-473.000.
Falco, Charles M.: *See—*
Schuller, Ivan K.; and Falco, Charles M., 4,448,854, Cl. 428-611.000.
Falender, James R.; and Saam, John C., to Dow Corning Corporation. Method of polymerizing oligomers of polydiorganosiloxane in the presence of filler. 4,448,927, Cl. 524-860.000.
Faltin, Hans G., to Advance Enterprises, Inc. Gripper clamps for conveying paper sheet products. 4,448,408, Cl. 271-277.000.
Fan, Liang-tseng; and Walawender, Walter P., to Kansas State University Research Foundation. Pyrolytic conversion of carbonaceous solids to fuel gas in quartz sand fluidized beds. 4,448,589, Cl. 48-197.00R.

Farber, Heinrich: *See*—
Bauer, Walter; Farber, Heinrich; and Muller, Jurgen, 4,448,508, Cl. 354-281.000.

Fascenda, Anthony C.; Gregg, Daniel L.; and Ache, Rollin W., to Dataspeed, Inc. System for identifying and displaying data transmitted by way of unique identifying frequencies from multiple vehicles. 4,449,114, Cl. 340-988.000.

Fasco Controls Corporation: *See*—
Gould, Richard E., 4,449,112, Cl. 338-39.000.
Gould, Richard E.; and Page, William P., 4,449,113, Cl. 338-39.000.

Fasolka, Michael J.; and Milligan, Barton, to Air Products and Chemicals, Inc. Polyurethanes prepated using poly(silyldiamines). 4,448,939, Cl. 525-474.000.

Favaloro, Caesar J.: *See*—
Liskov, Nathan A.; Curtis, Robert G.; Favaloro, Caesar J.; and Pence, Geogory L., 4,449,223, Cl. 375-10.000.

Fechner, Erhard A.: *See*—
Keller, Alex J.; Williams, Joseph R.; Fechner, Erhard A.; Pinto, Akiva; King, James A., Jr.; Crawford, Charles D.; and Maness, Riley C., 4,448,272, Cl. 177-1.000.

Fedotov, Michail I.: *See*—
Burov, Vadim K.; Vanjuskin, Boris M.; Voskoboev, Anatolij E.; Kon'kov, Nikolaj G.; Orechov, Vsevolod D.; Pismannik, Konstantin D.; Svin'in, Michail P.; Fedotov, Michail I.; Damerau, Werner; Dulling, Achim; Heger, Adolf; Reichardt, Gerd; and Wilde, Gotthard, 4,448,048, Cl. 68-5.00E.

Feehery, George R.: *See*—
Bolton, Joseph A.; and Feehery, George R., 4,447,924, Cl. 8-151.000.

Feix, Wolfgang H.; and Ruell, Hartwig E., to Siemens Corporation. Personal access control system using speech and face recognition. 4,449,189, Cl. 364-513.500.

Feldmann, Daniel P., to Rockwell International Corporation. Load status monitoring apparatus. 4,449,058, Cl. 307-152.000.

Feldmuhle Aktiengesellschaft: *See*—
Gomoll, Volker, 4,449,085, Cl. 318-641.000.

Felix, Ronald G.; and Hoffman, Douglas R., to AMP Incorporated. Latching slotted beam terminal. 4,448,473, Cl. 339-99.00R.

Fenn & Company: *See*—
Fenn, George S., 4,448,707, Cl. 252-194.000.

Fenn, George S., to Fenn & Company. Material for drying cut plants and apparatus for facilitating such drying. 4,448,707, Cl. 252-194.000.

Fennekels, Peter; and Waltmann, Ernst, to Girmes-Werke AG. Process for washing dyed or printed textile materials. 4,448,581, Cl. 8-137.000.

Ferrari, Mario. Flexible container and expeller. 4,448,333, Cl. 222-214.000.

Ferris, Carlisle K. Camouflaged aircraft. 4,448,371, Cl. 244-1.00R.

Ferro Corporation: *See*—
Ramey, Chester E.; and Rostek, Charles J., Jr., 4,448,969, Cl. 548-301.000.

Feudor S.A.: *See*—
Dumont, Bernard, 4,448,226, Cl. 141-2.000.

FGP Instrumentation: *See*—
Gibert, Francis J. P., 4,448,069, Cl. 73-182.000.

Filtertech Inc.: *See*—
Green, James F., 4,448,683, Cl. 210-106.000.

Finike Italiana Marposa S.p.A.: *See*—
Golinelli, Guido; and Selleri, Narciso, 4,447,960, Cl. 33-178.00E.

Fink, Herbert; Siol, Werner; Dinklage, Horst; and Rauch, Hubert, to Rohm GmbH. Method of making emulsion polymers. 4,448,945, Cl. 526-193.000.

Fink, Lothar, to Klockner-Werke AG. Method and apparatus for the injection molding and vulcanization of vehicle tires. 4,448,620, Cl. 156-125.000.

Fink, Roger L.: *See*—
Holmes, James C.; Bush, Harvey; and Fink, Roger L., 4,448,824, Cl. 428-33.000.

Finley, Arlington L.: *See*—
Spangenberg, Stanley F.; Finley, Arlington L.; and Searson, D. James, 4,448,654, Cl. 204-70.000.

Firmenich SA: *See*—
Delay, Francois, 4,448,650, Cl. 204-59.00R.

Fischer, Hanspeter: *See*—
Riebli, Peter; Fischer, Hanspeter; Thummel, Rudolph C.; and Hubele, Adolf, 4,448,773, Cl. 424-211.000.

Fischer, Melch; and Brunner, Kurt, to BBC Brown, Boveri & Company, Limited. Layered active brazing material and method for producing it. 4,448,853, Cl. 428-607.000.

Fischli, Albert E.: *See*—
Bruderer, Hans; Fischli, Albert E.; and Pfister, Rudolf, 4,448,991, Cl. 564-171.000.

Fisons Corporation: *See*—
Clemente, Emmett; Fung, Ho-Leung; and Brousseau, Denise, 4,448,774, Cl. 424-243.000.

Fishive, Barry J.; Grady, John J., III; and Rado, Peter J., to Digital Equipment Corporation. Arbitration scheme for a multiported shared functional device for use in multiprocessing systems. 4,449,183, Cl. 364-200.000.

Flanagan, James L.; and Johnston, James D., to Bell Telephone Laboratories, Incorporated. Silence editing speech processor. 4,449,190, Cl. 364-513.500.

Flannagan, Stephen T.: *See*—
Kung, Roger I.; Flannagan, Stephen T.; Spitz, Jonathan N.; Pelley, Perry H., III; Riley, Robert S.; and Covert, Douglas J., 4,449,207, Cl. 365-230.000.

Fleck, Arthur E.; and Tseng, Samuel C., to International Business Machines Corporation. Variable speed printing for dot matrix printers. 4,448,123, Cl. 101-93.040.

Fleischer, Niles A.; and Ekern, Ronald J., to Rayovac Corporation. Lithium-thionyl chloride cell with lithium surface alloys to reduce voltage delay. 4,448,861, Cl. 429-105.000.

Fleishman, Roc V.: *See*—
Pelka, David G.; and Fleishman, Roc V., 4,448,545, Cl. 374-41.000.

Flint, John R.: *See*—
Frystak, Richard; Johnston, Robert F.; and Flint, John R., 4,448,364, Cl. 242-674.000.

Flores, Robert J., to Sherwin-Williams Company, The. Process for the purification of triphenylmethane compounds and pressure sensitive copysheet containing same. 4,448,446, Cl. 346-224.000.

Fludzinski, Jan M., to Westinghouse Electric Corp. Coil diameter tracking system and tension regulation system using such tracking system. 4,448,366, Cl. 242-75.510.

Fluidmaster, Inc.: *See*—
Blau, Frederick, Jr.; and Gross, John M., 4,449,178, Cl. 364-148.000.

Fochi, Rita: *See*—
Degani, Iacopo; Fochi, Rita; and Regondi, Valeria, 4,449,004, Cl. 568-38.000.

Foley, Theodore A., to PyMaH Corporation. Steam sterilization indicator. 4,448,548, Cl. 374-160.000.

Foote, Jerry B., to Energy Products of Idaho. Uniform dispensing of granular material from a vessel. 4,448,134, Cl. 110-245.000.

Ford, Arthur J.; Kuhn, Patrick; and Long, William D., to Lilliston Corporation. Rubber spring for furrow opener. 4,448,259, Cl. 172-462.000.

Ford Motor Company: *See*—
Cheung, Mo-Fung; Garrett, David L., Jr.; and van Oene, Henk, 4,448,941, Cl. 525-528.000.
Hammerle, Robert H.; and Wu, Ching-Hsong, 4,448,756, Cl. 423-213.700.
Johnson, Robert C.; Nation, Thomas C.; and Perry, David L., 4,449,100, Cl. 324-378.000.

Forsberg, John W., to Lubrizol Corporation, The. Carboxylic solubilizer/surfactant combinations and aqueous compositions containing same. 4,448,703, Cl. 252-75.000.

Fortenberry, Charles K. Folding knife structure. 4,447,951, Cl. 30-161.000.

Fortescue, Stephen M., to Dataproducts Corporation. Encoder tracking digitizer having stable output. 4,449,117, Cl. 340-347.0SY.

Fortunato, James M.: *See*—
Glamkowski, Edward J.; and Fortunato, James M., 4,448,784, Cl. 424-274.000.

Foster, Brian R.; and Woodfin, William T., to BP Chemicals Limited. Method of producing ethanol-water azeotrope from crude ethanol. 4,448,644, Cl. 203-37.000.

Foster, Leslie W. Engine including means for retarding sparking operation to control engine overspeed. 4,448,179, Cl. 123-599.000.

Frain, John J. Method of producing stacks of ticket stacks. 4,448,127, Cl. 101-426.000.

Framatome: *See*—
Le Pargneux, Jacques, 4,448,561, Cl. 403-19.000.

Francis, Arthur W., Jr.; Nowotarski, Mark S.; and Solomon, Jack, to Union Carbide Corporation. Process for reducing backmixing. 4,448,616, Cl. 148-16.000.

Frank, Alick H.; and White, Joseph D., to United States of America, Navy. Passive maser using timesharing for control of the cavity and control of the oscillator on the line of stimulated emission. 4,449,105, Cl. 331-3.000.

Franke, Lutz: *See*—
Rehm, Gallus; and Franke, Lutz, 4,448,002, Cl. 52-223.00L.

Franke, Milton E.: *See*—
Reznick, Steven G.; and Franke, Milton E., 4,448,354, Cl. 239-265.170.

Franke, Rainer: *See*—
Berthold, Joachim; Diedrich, Bernd; Franke, Rainer; Hartlapp, Jurgen; Schafer, Werner; and Strobel, Wolfgang, 4,448,944, Cl. 526-119.000.

Franz, Joseph P., to General Electric Company. Single-stage, multiple outlet centrifugal blower. 4,448,573, Cl. 415-206.000.

Frazer, Gerald L., to Bell Telephone Laboratories, Incorporated. Adaptive threshold circuit. 4,449,102, Cl. 328-162.000.

Freeman, Maynard L. Control system for body organs. 4,448,190, Cl. 128-60.000.

Freermann, Johannes, to Carl Schmale KG. Machine for continuously folding over and stitching web edges. 4,448,138, Cl. 112-147.000.

Freid, Marvin G.: *See*—
Warner, Glenn H.; Theiling, Louis F., Jr.; and Freid, Marvin G., 4,448,977, Cl. 549-201.000.

French, Errol J. Sabre saw chuck. 4,448,432, Cl. 279-83.000.

Frerking, Marvin E., to United States of America, Air Force. Variable gain oven temperature control circuit. 4,449,032, Cl. 219-210.000.

Frey, Alfred: *See*—
Bucher, Karl; Matter, Max; Brunner, Bernhard; and Frey, Alfred, 4,448,776, Cl. 424-250.000.

Freyre, Frederick W., to Hazeltine Corporation. Acousto-optical signal detector. 4,448,494, Cl. 350-358.000.

Friedman, Bernard, to Oil Process Systems, Inc. Filter bag with integral agitator. 4,448,686, Cl. 210-238.000.

Friedrich, Hermann; Ruf, Claude; and Brosy, Jacques, to Philip Morris Incorporated. Tobacco extractor. 4,448,208, Cl. 131-297.000.

Friedrich, Wolfgang: *See*—
Brandenstein, Manfred; Walter, Lothar; Olschewski, Armin; Huber, Wolfgang; and Friedrich, Wolfgang, 4,448,294, Cl. 192-30.00V.
Frystak, Richard; Johnston, Robert F.; and Flint, John R., to Bell & Howell Company. Reversible ribbon drive. 4,448,364, Cl. 242-674.000.
Fuesting, Michael L. Sterilization method. 4,448,750, Cl. 422-20.000.
Fuji Electric Co., Ltd.: *See*—
Kuwaki, Masami; Hatada, Youichi; and Umino, Satoru, 4,448,346, Cl. 236-46.00R.
Fuji Jukogyo Kabushiki Kaisha: *See*—
Shibano, Kenji, 4,448,734, Cl. 261-26.000.
Fuji Photo Film Co., Ltd.: *See*—
Kondo, Syun-ichi; Sano, Kenji; and Sato, Hideo, 4,448,869, Cl. 430-83.000.
Murakoshi, Makoto, 4,448,510, Cl. 354-289.120.
Okita, Tsutomu; and Naruo, Kyoichi, 4,448,848, Cl. 428-447.000.
Shiota, Kazuo, 4,448,521, Cl. 355-77.000.
Yamada, Yasuyuki; Shirahata, Ryuji; Yanai, Akio; and Kitamoto, Tatsuji, 4,448,843, Cl. 428-336.000.
Yamaguchi, Nobutaka; Tsuji, Nobuo; and Fujiyama, Masaaki, 4,448,842, Cl. 428-329.000.
Yamamuro, Kiyohiko; Hirano, Shigeo; and Iwasa, Yasuo, 4,448,878, Cl. 430-507.000.
Fuji Xerox Co., Ltd.: *See*—
Inui, Toshiharu; Moriguchi, Haruhiko; and Ohmori, Takashi, 4,449,137, Cl. 346-76.0PH.
Kanzaki, Michio, 4,448,523, Cl. 355-133.000.
Kurata, Masami; Moriguchi, Fujio; Kikuchi, Yoshiki; Moriguchi, Haruhiko; and Ohmori, Takashi, 4,449,152, Cl. 358-296.000.
Moriguchi, Haruhiko; and Ohmori, Takashi, 4,449,136, Cl. 346-76.0PH.
Fujii, Yozo; Sakaguchi, Hirofumi; and Hirabayashi, Tsugio, to Konishiroku Photo Industry Co., Ltd. Split exposure optical system for copying machine. 4,448,514, Cl. 355-8.000.
Fujikawa, Misao, to Sodick Co., Ltd. Electrode mounting device. 4,449,027, Cl. 219-69.00E.
Fujikawa, Takao: *See*—
Moritoki, Masato; Fujikawa, Takao; and Miyanaga, Junichi, 4,448,747, Cl. 419-49.000.
Fujikawa, Tsuneo; Kamio, Kazuyoshi; and Takagishi, Haruyoshi, to Nissan Motor Company, Limited. Automatic vehicle-body assembling apparatus. 4,448,341, Cl. 228-45.000.
Fujimori, Ryo: *See*—
Banno, Taiichi; Fujimori, Ryo; Takekawa, Hiroshi; and Hijikata, Kazuo, 4,448,752, Cl. 422-81.000.
Fujimura, Hajime: *See*—
Toyoshima, Shigeshi; Fujimura, Hajime; Ito, Shunsuke; and Kondo, Yasuji, 4,448,788, Cl. 424-313.000.
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Fujisawa, Fumio: *See*—
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Fujita, Takeshi: *See*—
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Fujito, Katsuyuki: *See*—
Unoguchi, Takehiko; Hasegawa, Seiro; Fujito, Katsuyuki; Nishino, Atsushi; and Yoshida, Akihiko, 4,449,188, Cl. 364-505.000.
Fujitsu Fanuc Limited: *See*—
Kozai, Yoshinori; Kobari, Katsuo; and Sakamoto, Keiji, 4,449,177, Cl. 363-126.000.
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Aoyama, Keizo; and Yamauchi, Takahiko, 4,449,066, Cl. 307-432.000.
Ohmichi, Hitoshi; Enomoto, Hiromu; Yasuda, Yasushi; Mitono, Yoshiharu; and Imaizumi, Taketo, 4,449,063, Cl. 307-456.000.
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Fukazawa, Takeshi; Yamaguchi, Shunzo; and Atsumi, Morihiro, to Nippondenso Co., Ltd. Ceramic heater. 4,449,039, Cl. 219-553.000.
Fukuda, Tadaji; and Nishigaki, Yuji, to Canon Kabushiki Kaisha. Process for forming deposition film. 4,448,801, Cl. 427-39.000.
Fukuhara, Toru: *See*—
Saegusa, Takashi; Maida, Osamu; and Fukuhara, Toru, 4,448,506, Cl. 354-431.000.
Fukuta, Teizo: *See*—
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Fukuyoshi, Kenzo: *See*—
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Fulcher, Junius H., to Mosely, Neal J., a part interest. Building with illuminated sign. 4,447,995, Cl. 52-38.000.
Fulde, Roland C.; and Kwis, Stanley H., to Campbell Soup Company. Brownable dough for microwave cooking. 4,448,791, Cl. 426-94.000.
Fuller, Dennis D., to Dresser Industries, Inc. Rock bit with bearing lubricant reservoir. 4,448,268, Cl. 175-228.000.
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Fung, Ho-Leung: *See*—
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Funk, Hans O.; Neumann, Frank; and Schaefer, Dankmar, to Johannes Schaefer vormals Stettiner Schraubenwerke GmbH & Co. KG. Coupling for pressure lines. 4,448,447, Cl. 285-4.000.
Furedi, Ervin J.: *See*—
Blodgett, Richard E.; and Furedi, Ervin J., 4,448,095, Cl. 81-57.290.
Furuhashi, Kenji: *See*—
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G. D. Searle & Co.: *See*—
Tsau, Josef H., 4,448,716, Cl. 260-112.50R.
Gabriels, Andre J., to Fabrique Nationale Herstal. Telescopic projectile. 4,448,129, Cl. 102-487.000.
GAF Corporation: *See*—
Hort, Eugene V.; Anderson, Lowell R.; and Alwani, Dru W., 4,448,710, Cl. 252-390.000.
Lewis, David F., 4,448,875, Cl. 430-283.000.
Lin, I. Sioun; Gromelski, Stanley J., Jr.; Hort, Eugene V.; Anderson, Lowell R.; and Williams, Earl P., 4,448,905, Cl. 521-164.000.
Liu, Kou-Chang; and Brown, Michael J., 4,448,982, Cl. 560-21.000.
Lorenz, Donald H.; and Williams, Earl P., 4,448,876, Cl. 430-296.000.
Ozari, Yehuda; Nelsen, Suzanne B.; and Klein, Andrew, 4,448,932, Cl. 525-78.000.
Gage, Charles H.: *See*—
Jalil, Asjed A.; Winslow, Earl S., Jr.; and Gage, Charles H., 4,448,401, Cl. 266-78.000.
Gahm, William J., to Graber-Rogg, Inc. Plastic container having a concealed hinge. 4,448,327, Cl. 220-341.000.
Gain, Lorand H., Jr., to Amsted Industries Incorporated. Post indicating valve assembly indicator. 4,448,148, Cl. 116-277.000.
Gallati, Harald: *See*—
Brodbeck, Hans; and Gallati, Harald, 4,448,882, Cl. 435-188.000.
Gardner, Edward A.: *See*—
Rubinson, Barry L.; Gardner, Edward A.; Grace, William A.; Lary, Richard F.; and Keck, Dale R., 4,449,182, Cl. 364-200.000.
Gardner, Thomas A. Dryer drainage by recirculation with primary and secondary dryers. 4,447,964, Cl. 34-16.000.
Garlock Equipment Company: *See*—
Wyatt, Lloyd A., 4,448,398, Cl. 254-361.000.
Garneau, William L. Gutter construction and method. 4,447,994, Cl. 52-11.000.
Garrett, David L., Jr.: *See*—
Cheung, Mo-Fung; Garrett, David L., Jr.; and van Oene, Henk, 4,448,941, Cl. 525-528.000.
Garrett, David W.: *See*—
Black, Denny E.; and Garrett, David W., 4,448,917, Cl. 524-160.000.
Garschick, Alfred, to BIW Cable Systems, Inc. Oil well cable. 4,449,013, Cl. 174-103.000.
Gastinger, Robert G., to Atlantic Richfield Company. Method for producing a vanadium-titanium catalyst exhibiting improved intrinsic surface area. 4,448,897, Cl. 502-350.000.
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Gatzschmann, Horst; Bertels, Herbert; Hafner, Hubertus; and Schmid, Alfred, to Chemische Werke Huls AG. Method for pretreating thermoplastic substrates containing carbonamide groups in the preparation of strongly adhering metal coatings. 4,448,836, Cl. 428-164.000.
Gaudry, Roger: *See*—
Doriath, Gerard; Gaudry, Roger; and Hepner, Georges, 4,449,096, Cl. 324-244.000.
Gauger, Jurgen F.; Hinden, Jean M.; and Katz, Michael, to Diamond Shamrock Corporation. Process for manufacturng a polychelate coating. 4,448,803, Cl. 427-58.000.
Gearhart Industries, Inc.: *See*—
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Gebr. Henning GmbH: *See*—
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Pohl, Claus, 4,448,834, Cl. 428-122.000.
General Director of the Agency of Industrial Science and Technology: *See*—
Sato, Akio; Nakajima, Kenji; Takahara, Yoshimasa; Kijima, Shizumasa; Watanabe, Hideaki; Kawamura, Tamio; and Nagai, Yasushi, 4,449,002, Cl. 568-28.000.
General Dynamics, Pomona Division: *See*—
Speer, Spencer J., 4,448,130, Cl. 102-498.000.
General Electric Company: *See*—
Agnor, William C.; Lafferty, Edwin C.; and Toliver, Samuel, 4,449,104, Cl. 330-279.000.
Andrews, Edward W.; Celek, John E.; Morse, Royal R., III; and Bergholz, Eugene W., 4,449,195, Cl. 364-900.000.

Bopp, Richard C.; Golba, Joseph C., Jr.; and White, Scott A., 4,448,937, Cl. 525-432.000.
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Cipolla, Thomas M., 4,448,405, Cl. 269-32.000.
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Factor, Arnold; and Sannes, Keith N., 4,448,727, Cl. 260-463.000.
Franz, Joseph P., 4,448,573, Cl. 415-206.000.
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Golba, Joseph C., Jr.; and Shete, Prakash K., 4,448,909, Cl. 523-303.000.
Grenoble, Maurice E.; and Eckberg, Richard P., 4,448,815, Cl. 427-387.000.
Iacovangelo, Charles D., 4,448,857, Cl. 429-41.000.
Ito, Nobuo; Takeuchi, Koji; Abe, Masahiro; and Hirai, Kiyomiki, 4,448,949, Cl. 528-99.000.
Klein, Steven H.; and Smith, Alfred H., Jr., 4,448,928, Cl. 524-864.000.
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Leslie, Samuel A.; and Schwartz, Robert C., 4,449,248, Cl. 455-38.000.
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Nied, Herman A., 4,449,029, Cl. 219-117.100.
Ohno, John M., 4,448,591, Cl. 51-298.000.
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General Motors Corporation: *See*—
Bishop, Gary E., 4,448,235, Cl. 164-34.000.
Gladd, Joseph H.; Plyler, Robert G.; and Suverison, Lyle B., 4,448,477, Cl. 339-258.0RR.
Romblom, Edward F.; and Sundeen, Arthur R., 4,448,066, Cl. 73-119.00A.

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Lenke, Gerd M.; Melby, Earl G.; and Fabris, Hubert J., 4,448,956, Cl. 528-312.000.

Genstar Waste Transfer, Inc.: *See*—
Maphis, Sam W., 4,448,690, Cl. 210-609.000.

Gentry, Cecil C., to Phillips Petroleum Company. Apparatus and method for beneficiation of lignite. 4,448,678, Cl. 209-3.000.

Gentry, Larry L.; Moss, Herbert H.; and Panicker, Narayana N., to Mobil Oil Corporation. Marine surface facility work station for subsea equipment handling. 4,448,568, Cl. 405-169.000.

George Fischer Ltd.: *See*—
Reich, Fritz; and Thalmann, Alfred, 4,449,038, Cl. 219-535.000.

Geosling, Christine E.: *See*—
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Gerber Garment Technology, Inc.: *See*—
Pearl, David R., 4,448,808, Cl. 427-208.600.

Gerlach Industries Inc.: *See*—
Iannelli, Frank M., 4,448,036, Cl. 62-178.000.

Gestaut, Lawrence J.; and Simcox, P. David, to Diamond Shamrock Corporation. Biodispersions. 4,448,886, Cl. 435-262.000.

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Becker, Kunibert; Kirchbrucher, Rudiger; and Elsner, Burckhard, 4,448,263, Cl. 173-34.000.

Geyer, Frederick F.; and Leonard, Eric M., to Eastman Kodak Company. Optical disc unit, fabrication method and cooperating write and/or read apparatus. 4,449,139, Cl. 346-137.000.

Gibert, Francis J. P., to FGP Instrumentation. Airspeed sensing post for determining relative velocity of a fluid and a carrier. 4,448,069, Cl. 73-182.000.

Gibney, Ann: *See*—
Zuckerbrod, David; and Gibney, Ann, 4,448,856, Cl. 429-27.000.

Gier, Rolland H. Collapsible hand truck. 4,448,440, Cl. 280-655.000.

Giezendanner, Ruedi. Ladder formed as a multiple-purpose device. 4,448,282, Cl. 182-22.000.

Gilbreath, James C. Outboard motor support bracket. 4,448,387, Cl. 248-642.000.

Gildersleeves, Clive D. P.: *See*—
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Gill, Cyril A. Picture framing. 4,448,572, Cl. 408-115.00R.

Gillich, Thomas N.; Walls, John E.; Wanat, Stanley F.; and Rozell, William J., to American Hoechst Corporation. Electrochemically treated metal plates. 4,448,647, Cl. 204-33.000.

Gilligan, William H.: *See*—
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Gipson, Robert M.: *See*—
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Girard, Donald D., to Raytheon Company. Method of controlling antiaircraft fire. 4,449,041, Cl. 235-412.000.

Girmes-Werke AG: *See*—
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Gladd, Joseph H.; Plyler, Robert G.; and Suverison, Lyle B., to General Motors Corporation. Electric socket terminal. 4,448,477, Cl. 339-258.0RR.

Glamkowski, Edward J.; and Fortunato, James M., to Hoechst-Roussel Pharmaceuticals, Inc. 1-(Aminoalkylphenyl and aminoalkylbenzyl)-indoles and indolines and analgesic method of use thereof. 4,448,784, Cl. 424-274.000.

Glass, Cyril; Hursey, Leslie G.; and Inness-Turnbull, Ronald, to Sargom Company Limited, The. Flame retardant compositions for textiles and treated textiles. 4,448,841, Cl. 428-270.000.

Gleim, William K. T., to Energy Modification, Inc. Method of reforming gasoline to raise the octane thereof utilizing low valence chromium composited with non-oxidizing high surface area support. 4,448,676, Cl. 208-136.000.

Glenn, William K., III; Jones, John E.; Laing, Gordon E.; and Sumerau, William R., to Singer Company, The. Power head unit for carpet cleaning. 4,447,930, Cl. 15-322.000.

Global Marine, Inc.: *See*—
Wetmore, Sherman B.; and Knorr, Gordon D., 4,448,277, Cl. 180-127.000.

Glowny Instytut Gornictwa: *See*—
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Goetze AG: *See*—
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Golba, Joseph C.; and Hansen, Marion G., to General Electric Company. Method for measuring polymerization process variables. 4,448,943, Cl. 526-59.000.

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Golinelli, Guido; and Selleri, Narciso, to Finike Italiana Marposs S.p.A. Plug gauge for checking dimensions of bores of mechanical parts. 4,447,960, Cl. 33-178.00E.

Golinski, Stanley; and Rapp, Willard E., to AT & T Technologies, Inc. Technique for inserting keying members into backplanes. 4,447,948, Cl. 29-829.000.

Gomoll, Volker, to Feldmuhle Aktiengesellschaft. Control for operation of a machine tool. 4,449,085, Cl. 318-641.000.

Googin, John M.: *See*—
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Gordon, Edward C., Jr.; and Gordon, Glen D. Effluent water filter device and method. 4,448,695, Cl. 210-694.000.

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Goto, Satoshi: *See*—
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Gould, Richard E.; and Page, William P., to Fasco Controls Corporation. Oil pressure sender with friction free resistor device. 4,449,113, Cl. 338-39.000.

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Grady, John J., III: *See*—
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Graf, Eugen; and Kindle, Edwin, to Hilti Aktiengesellschaft. Pneumatic nail driver. 4,448,338, Cl. 227-8.000.

Graf, James E.; and Rowlette, John J., to California Institute of Technology. Chemically rechargeable battery. 4,448,858, Cl. 429-49.000.

Gragg, Frederick M.; Shen, Jian C.; and Jacobson, Carl L., to Occidental Research Corporation. Method of in situ oil shale retort ignition with oxygen control. 4,448,249, Cl. 166-251.000.

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Gray, Frederick W., to Colgate-Palmolive Company. Monoperoxyphthalic acid bleaching composition containing DTPMP. 4,448,705, Cl. 252-102.000.

Green, James F., to Filtertech Inc. Liquid filtration system with level-responsive contaminant removal and air flow control for vacuum producer. 4,448,683, Cl. 210-106.000.

Greenblatt, Julius. Sofa bed with contoured mattress. 4,447,921, Cl. 5-12.00R.

Greer, Richard H.; and Newport, James B. Circuit breaker control device. 4,449,055, Cl. 307-38.000.

Gregg, Daniel L.: *See*—
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Grellet, Bernard; Emmanuel, Jean-Pierre; and Sipp, Bernard, to Centre Stephanois de Recherches Mecaniques Hydromecanique et Frottement. Process for improving the corrosion resistance of ferrous metal parts. 4,448,611, Cl. 148-6.110.

Grenoble, Maurice E.; and Eckberg, Richard P., to General Electric Company. Multi-component solventless silicone release coating system. 4,448,815, Cl. 427-387.000.

Greschner, Johann: *See*—
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Greven, Johannes: *See*—
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Griffin, Kary A. Floor panel. 4,447,998, Cl. 52-126.600.

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Grosberg, Joseph J., to USM Corporation. Adjustable bore target and gage. 4,447,962, Cl. 33-286.000.

Gross, Benjamin; Haddad, James H.; and Malladi, Madhava, to Mobil Oil Corporation. Apparatus for regenerating cracking catalyst. 4,448,753, Cl. 422-144.000.

Gross, John M.: *See*—
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Grosser, Werner: *See*—
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GTE Products Corporation: *See*—
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Scheithauer, Richard A.; Miller, Michael J.; MacInnis, Martin B.; Christini, James N.; and Vogt, Martin C., 4,448,755, Cl. 423-56.000.
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Weir, Colin B., 4,449,128, Cl. 343-858.000.

Guier, William. Apparatus for setting casing in an oil well. 4,448,246, Cl. 166-77.000.

Gulf & Western Manufacturing Company: *See*—
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Gumkowski, Bert A.; and Schreiner, Peter J., to Bendix Corporation, The. Disc brake assembly. 4,448,289, Cl. 188-73.450.

Gunther, Christian: *See*—
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Gunzy, Jack: *See*—
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Gurnett, Keith W.: *See*—
Sinnadurai, F. Nihal; Cook, Anthony J.; and Gurnett, Keith W., 4,448,306, Cl. 206-331.000.

Gushea, Roger B. Bubble-blowing apparatus. 4,447,982, Cl. 46-8.000.

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Smetana, Karel; Busch, Harris; Busch, Rose K.; Gyorkey, Ferenc; Gyorkey, Phyllis; and Davis, Frances M., 4,448,890, Cl. 436-508.000.

Gyorkey, Phyllis: *See*—
Smetana, Karel; Busch, Harris; Busch, Rose K.; Gyorkey, Ferenc; Gyorkey, Phyllis; and Davis, Frances M., 4,448,890, Cl. 436-508.000.

Haas, Peter: *See*—
Axelrod, Norman N.; Haas, Peter; and Noess, Rainer, 4,448,503, Cl. 353-26.00A.

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Sugimori, Teruhiko; Suzuki, Fumio; and Habara, Hideaki, 4,448,537, Cl. 366-75.000.

Habegger, Willy; and Lauber, Ernst, to Willy Habegger AG. Apparatus for pulling in and letting out a cable. 4,448,393, Cl. 254-264.000.

Haberkorn, Herbert: *See*—
Stutz, Herbert; Iliers, Karl H.; Haberkorn, Herbert; and Heckmann, Walter, 4,448,946, Cl. 528-67.000.

Hachtel, Hanajorg: *See*—
Dobler, Klaus; and Hachtel, Hanajorg, 4,448,084, Cl. 73-862.330.

Hackman, Donald J.; Caudy, Don W.; Wernli, Robert L.; and Alfaro, Carl S., to United States of America, Navy. Lift sling emplacement device. 4,448,569, Cl. 405-190.000.

Haddad, James H.: *See*—
Gross, Benjamin; Haddad, James H.; and Malladi, Madhava, 4,448,753, Cl. 422-144.000.

Hafner, Hubertus: *See*—
Gatzschmann, Horst; Bertels, Herbert; Hafner, Hubertus; and Schmid, Alfred, 4,448,836, Cl. 428-164.000.

Haftlmeier, Theo: *See*—
Reichert, Rudolf; and Haftlmeier, Theo, 4,448,464, Cl. 312-214.000.

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Off, Joseph W. A.; Early, Judson H.; Roady, Daniel K.; and Thayer, Theodore B., 4,448,626, Cl. 156-256.000.

Hagiwara, Isao: *See*—
Ogishi, Masaaki; Hagiwara, Isao; Yoshida, Yukio; and Oono, Kenzo, 4,449,078, Cl. 318-102.000.

Haines, Paul G., to Pennwalt Corporation. Preparation of methyl mercaptan from carbon oxides. 4,449,006, Cl. 568-70.000.

Haines, Richard M.; and Wong, Robert, to Owens-Corning Fiberglas Corporation. Aqueous compositions for sizing glass fibers containing emulsified epoxy resin and chloropropylsilane. 4,448,910, Cl. 523-402.000.

Haines, Richard M.; and Wong, Robert, to Owens-Corning Fiberglas Corporation. Aqueous epoxy sizing composition for glass fibers and fibers sized therewith. 4,448,911, Cl. 523-411.000.

Hajime Industries Ltd.: *See*—
Yoshida, Hajime, 4,449,240, Cl. 382-15.000.

Hale Fire Pump Company: *See*—
Eberhardt, H. Alfred; Hoffman, Kenneth F.; and Petersen, Raymond R., 4,448,256, Cl. 169-15.000.

Hall, John B.; and Sprecker, Mark A., to International Flavors & Fragrances Inc. Process for preparing 1(4-pentonoyl)-3,3-dimethylcyclohexane and intermediates used in a said process. 4,449,007, Cl. 568-343.000.

Hall, Thomas D. Mechanical knee. 4,447,916, Cl. 3-22.000.

Hallberg, Frederick C.; and Morgan, Clyde J., to United States of America, Administrator, National Aeronautics and Space Administration. Workpiece positioning vise. 4,448,406, Cl. 269-224.000.

Halliburton Company: *See*—
Barrington, Burchus Q., 4,448,254, Cl. 166-373.000.

Halling, Horace P.; and Sadoff, Bernard J., Jr. Flexible piping joint and method of forming same. 4,448,449, Cl. 285-263.000.

Halstead, Raymond T.; and Black, Charles E., III, to Indak Manufacturing Corp. Vacuum control valve for automotive heating and airconditioning systems. 4,448,390, Cl. 251-176.000.

Hama, Hiroaki; Imanishi, Masami; Funahashi, Yasuyuki; and Kato, Seiichi, to Mitsubishi Denki Kabushiki Kaisha. Combined air conditioning and hot water service system. 4,448,037, Cl. 62-188.000.

Hammerle, Robert H.; and Wu, Ching-Hsong, to Ford Motor Company. Process for treatment of exhaust gases. 4,448,756, Cl. 423-213.700.

Hampson, Alfred A.; and Hutchins, Thomas B., deceased (by Hutchins, Nancy K., executrix), to Can and Bottle Systems, Inc. Redeemable container with end closure redemption code. 4,449,042, Cl. 235-464.000.

Hanafee, James S.: *See*—
Perlman, Stanley; Herbert, William G.; Layton, Donald; and Hanafee, James S., 4,448,476, Cl. 339-203.000.

Hanemann, Gerhard: *See*—
Muller, Ortwin; Biber, Klaus; Jakubowski, Heinz; and Hanemann, Gerhard, 4,448,498, Cl. 350-516.000.

Hanlet, Jacques M., to Intent Patent A.G. Fastening system. 4,448,321, Cl. 220-4.00R.

Hanlon, John V.: *See*—
Hinkamp, James B.; and Hanlon, John V., 4,448,587, Cl. 44-57.000.

Hanna, Craig A.; and Lancki, Edmund, to International Business Machines Corporation. Self-clocking serial decoder. 4,449,119, Cl. 340-347.0DD.

Hanna, Marie R.: *See*—
Sprecker, Mark A.; Hanna, Marie R.; Tokarzewski, Richard J.; Belko, Robert P.; Watkins, Hugh; and Vock, Manfred H., 4,448,984, Cl. 560-256.000.

Hansen, Hanspeter: *See*—
Rohr, Wolfgang; Hansen, Hanspeter; Plath, Peter; and Wuerzer, Bruno, 4,448,960, Cl. 544-282.000.

Hansen, Marion G.: *See*—
Golba, Joseph C.; and Hansen, Marion G., 4,448,943, Cl. 526-59.000.

Hansen, Robert S. Adjustable telephone message holder. 4,448,383, Cl. 248-447.100.

Hanson, Robert B., to Standard Oil Company (Indiana). Injection moldable polymers containing phthalic anhydride. 4,448,925, Cl. 524-600.000.

Hanwa Elecyronic Co., Ltd.: *See*—
Otoi, Takashi, 4,449,091, Cl. 323-236.000.

Hanyu, Takaomi; Irie, Nobuhiko; Hasegawa, Akira; Muta, Teruaki; Sakaguchi, Katsuyoshi; Ikeda, Toshihisa; Itayama, Yoshiharu; and Nakahara, Akira, to Mitsubishi Jukogyo Kabushiki Kaisha. Tire vulcanizing press. 4,448,575, Cl. 425-47.000.

Haq, Zia: *See*—
Barby, Donald; Clarke, David E.; Lloyd, John; and Haq, Zia, 4,448,704, Cl. 252-91.000.

Hara, Hisao: *See*—
Moriyama, Masakazu; Saito, Takao; Ido, Akinori; Matsushima, Takeo; and Hara, Hisao, 4,448,035, Cl. 62-176.600.

Haramoto, Yutaka: *See*—
Ishigaki, Yukinobu; Haramoto, Yutaka; and Totsuka, Kaoru, 4,449,106, Cl. 333-14.000.

Harari, Eliyahou. Highly scalable dynamic RAM cell with self-signal amplification. 4,448,400, Cl. 365-185.000.

Harari, Eliyahou. Dynamic merged load logic (MLL) and merged load memory (MLM). 4,449,224, Cl. 377-79.000.

Hardesty, Edwin C., to AT&T Technologies, Inc. Slotted, substantially rigid multi-conductor electrical connector. 4,448,472, Cl. 339-97.00P.

Harlow, Stanley D.; and Alexander, Donald, to International Harvester Co. Rotary macerator. 4,448,357, Cl. 241-32.000.

Harmsen, Arlyn V.: *See*—
Harmsen, Wayne A.; and Harmsen, Arlyn V., 4,448,260, Cl. 172-777.000.

Harmsen, Wayne A.; and Harmsen, Arlyn V., to Harmsen, Wayne A. Pivotal blade spikes for tractors. 4,448,260, Cl. 172-777.000.

Harris Corporation: *See*—
Seiler, Norman C.; Nixon, Thomas J.; and Waschka, George A., Jr., 4,449,246, Cl. 455-9.000.
Waschka, George A., Jr., 4,449,247, Cl. 455-9.000.

Hartlapp, Jurgen: *See*—
Berthold, Joachim; Diedrich, Bernd; Franke, Rainer; Hartlapp, Jurgen; Schafer, Werner; and Strobel, Wolfgang, 4,448,944, Cl. 526-119.000.

Hartmann, Paul R.: *See*—
Crossett, Joseph A., III; and Hartmann, Paul R., 4,449,222, Cl. 375-10.000.

Hartog, Stefan; and Hollmark, Holger, to Svenska Traforskningsinstitutet. Method and apparatus for applying liquid to a moving surface. 4,448,818, Cl. 427-424.000.

Hasagawa, Yoshikazu: *See*—
Negi, Shigeto; Machida, Yoshimasa; Yamauchi, Hiroshi; Saito, Isao; Hanagawa, Yoshikazu; and Kawamura, Tamio, 4,448,775, Cl. 424-246.000.

Hasbrouck, Gene B., to Hon Industries, Inc. Tube connections. 4,448,003, Cl. 52-239.000.

Hasegawa, Akira: *See*—
Hanyu, Takaomi; Irie, Nobuhiko; Hasegawa, Akira; Muta, Teruaki; Sakaguchi, Katsuyoshi; Ikeda, Toshihisa; Itayama, Yoshiharu; and Nakahara, Akira, 4,448,575, Cl. 425-47.000.

Hasegawa, Keiji, to Ricoh Company, Ltd. Impact printing apparatus with interchangeable rotary type wheels. 4,448,555, Cl. 400-144.200.

Hasegawa, Seiro: *See*—
Unoguchi, Takehiko; Hasegawa, Seiro; Fujito, Katsuyuki; Nishino, Atsushi; and Yoshida, Akihiko, 4,449,188, Cl. 364-505.000.

Hasegawa, Shumpei; Koumura, Takashi; Nakajima, Toyohei; Miyake, Junichi; and Kimura, Junichi, to Honda Motor Co., Ltd. Exhaust gas recirculation control system having variable valve lift correcting speed for exhaust gas recirculation valve. 4,448,177, Cl. 123-571.000.

Hashimoto, Naoki: *See*—
Watanabe, Masaru; Yamauchi, Nobuharu; Hashimoto, Naoki; and Tamama, Tetsuo, 4,449,192, Cl. 364-559.000.

Hashimoto, Nobuyuki; and Hattori, Takemi, to Aisin Seiki Kabushiki Kaisha. Air bag system having a branched joint. 4,448,228, Cl. 141-114.000.

Hashimoto, Shingo; and Sekine, Mitsuo, to Citizen Watch Company Limited. Temperature sensing device. 4,448,549, Cl. 374-170.000.

Hashimoto, Shintaro; Masuzawa, Sigeaki; Tsuda, Hiroshi; Sibata, Shinya; and Nakano, Masahiro, to Sharp Kabushiki Kaisha. Audibly announcing apparatus. 4,449,232, Cl. 381-51.000.

Hass, Robert H., to Union Oil Company of California. Process for removing SO_x and NO_x compounds from gas streams. 4,448,899, Cl. 521-32.000.

Hastings Fiber Glass Products, Inc.: *See*—
Apperson, Kenneth P.; and Morgan, Cecil D., 4,449,010, Cl. 174-5.00R.

Hatada, Youichi: *See*—
Kuwaki, Masami; Hatada, Youichi; and Umino, Satoru, 4,448,346, Cl. 236-46.00R.

Hathaway, James C.: *See*—
Wertz, Richard K.; Cook, Albert M.; and Hathaway, James C., 4,448,534, Cl. 356-435.000.

Hatta, Takao: *See*—
Muto, Kenji; Watanabe, Minoru; Hatta, Takao; Sugaya, Toru; Takemoto, Yoshinori; and Nakamizo, Nobuhiro, 4,448,964, Cl. 546-194.000.

Hattori, Takemi: *See*—
Hashimoto, Nobuyuki; and Hattori, Takemi, 4,448,228, Cl. 141-114.000.

Hauk, Rolf: *See*—
Weber, Ralph; Rollinger, Bernt; Hauk, Rolf; Nagle, Michael; and Rinner, Bernhard, 4,448,402, Cl. 266-183.000.

Havlis, Jerome F. Counter flow separator. 4,448,688, Cl. 210-512.300.

Hawkins, Royal R., to Sundstrand Corporation. Anti-stall control. 4,448,021, Cl. 60-449.000.

Hayashi, Isao; and Moriya, Makoto, to Nissan Motor Co., Ltd. Safety fuel filler structure of a motor vehicle. 4,448,323, Cl. 220-86.00R.

Hayashi, Junichi, to Yamato Scale Company, Ltd. Device for measuring components of force and moment in plural directions. 4,448,083, Cl. 73-862.040.

Hayashi, Kiyoshi, to Nippon Kogaku K. K. Zoom lens system capable of very close range photography. 4,448,495, Cl. 350-428.000.

Hayashi, Masamichi, to Minolta Camera Kabushiki Kaisha. Drive controlling mechanism of optical member for use in copying apparatus. 4,448,517, Cl. 355-56.000.

Hazelrigg, Mark J., Jr.: *See*—
Dang, Hiep D.; Beaver, Richard N.; Spillers, Frank W.; and Hazelrigg, Mark J., Jr., 4,448,663, Cl. 204-270.000.

Hazeltine Corporation: *See*—
Freyre, Frederick W., 4,448,494, Cl. 350-358.000.

Heat Transfer Pty. Ltd.: *See*—
Pain, John R., 4,448,243, Cl. 165-134.00R.

Heath, Thomas K.: *See*—
Marling, John B.; and Heath, Thomas K., 4,448,500, Cl. 350-574.000.

Heckmann, Walter: *See*—
Stutz, Herbert; Illers, Karl H.; Haberkorn, Herbert; and Heckmann, Walter, 4,448,946, Cl. 528-67.000.

Hedges, Charles V.: *See*—
Rosenquist, Niles R.; Mark, Victor; and Hedges, Charles V., 4,448,953, Cl. 528-198.000.

Heger, Adolf: *See*—
Burov, Vadim K.; Vanjuskin, Boris M.; Voskoboev, Anatolij E.; Kon'kov, Nikolaj G.; Orechov, Vsevolod D.; Piamannik, Konstantin D.; Svin'in, Michail P.; Fedotov, Michail I.; Damerau, Werner; Dulling, Achim; Heger, Adolf; Reichardt, Gerd; and Wilde, Gotthard, 4,448,048, Cl. 68-5.00E.

Heidelberger Druckmaschinen: *See*—
Jeschke, Willi; Rambausek, Hugo; Uhrig, Rudolf-Karl; and Loffler, Gerhard, 4,448,533, Cl. 356-416.000.

Heider, John G.: *See*—
Kathawala, Faizulla G.; and Heider, John G., 4,448,785, Cl. 424-274.000.

Hein, Norman W., Jr.: *See*—
Peterson, Marvin L.; and Hein, Norman W., Jr., 4,448,062, Cl. 73-86.000.

Heinemann, Henning; Jasserand, Daniel; Milkowski, Wolfgang; Yavordios, Dimitri; and Zeugner, Horst, to Kali-Chemie Pharma GmbH. 1-Phenylindazole-3-one compounds, process and intermediates for their preparation, and pharmaceutical compositions containing same. 4,448,777, Cl. 424-250.000.

Heinrich Josef Winter, Firma: *See*—
Kern, Josef, 4,448,319, Cl. 215-329.000.

Heinrich, Rudolf: *See*—
Schumacher, Hans; Albrecht, Konrad; and Heinrich, Rudolf, 4,448,602, Cl. 71-90.000.

Heintz, Phillip L.: *See*—
Darvial, Bruce L.; Heintz, Phillip L.; Smith, John S.; and Walth, Lee A., 4,448,175, Cl. 123-557.000.

Helms, Charles R., to Container Corporation of America. Composite lid. 4,448,345, Cl. 229-43.000.

Henault, Claude, to Regie Nationale des Usines Renault. Variable gas distribution device for internal combustion motors. 4,448,156, Cl. 123-90.170.

Henderson, James A., Jr.: *See*—
Burke, Edmund T.; Catalano, Joseph F.; Henderson, James A., Jr.; and Smith, Nicholas K., 4,449,017, Cl. 179-27.00D.

Henderson, Timothy M., to KMS Fusion, Inc. Glass-surface microcarrier for growth of cell cultures. 4,448,884, Cl. 435-241.000.

Henkel KGaA: *See*—
Preuss, Wolfgang, 4,448,725, Cl. 260-397.100.

Hennessy Products, Incorporated: *See*—
Wingate, W. Jack, 4,448,328, Cl. 221-13.000.

Hennig, Kurt; Klein, Manfred; and Nuspl, Matthias, to Gebr. Henning GmbH. Scraper device and assembly tool. 4,447,929, Cl. 15-256.500.

Henrick, Clive A., to Zoecon Corporation. Substituted cycloalkanediones. 4,448,965, Cl. 546-302.000.

Henrick, Clive A.: *See*—
Lindahl, George R., III; and Henrick, Clive A., 4,448,961, Cl. 544-311.000.

Henry, James L.; and Stocker, Wendy A., to Bell Telephone Laboratories, Incorporated. One-bit full adder circuit. 4,449,197, Cl. 364-784.000.

Hepner, Georges: *See*—
Doriath, Gerard; Gaudry, Roger; and Hepner, Georges, 4,449,096, Cl. 324-244.000.

Heppenstall, Keith, to Lucas Industries Limited. Drive circuit. 4,449,162, Cl. 361-156.000.

Heraeus Elektroden GmbH: *See*—
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Herbert, William G.: *See*—
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Hermans, Mathias L.: *See*—
van der Sluys, Willem L. N.; and Hermans, Mathias L., 4,448,596, Cl. 62-101.000.

Herndon, Gerald F., to Boeing Company, The. Folding truss mechanism for trailing edge flaps. 4,448,375, Cl. 244-216.000.

Herring, William M.: *See*—
Emery, Donald B.; and Herring, William M., 4,448,736, Cl. 264-40.100.

Herronen, John R.: *See*—
Weaver, Richard A.; Niedzielski, James H.; Herronen, John R.; Wright, Joseph M.; and Prime, Ronald M., 4,448,302, Cl. 198-781.000.

Hervieu, Rene , to Centre National pour l'Exploitation des Oceans. Unmanned submarine vehicle. 4,448,145, Cl. 114-312.000.

Hewlett Packard Company: *See*—
Stawitcke, Frederick A.; Mordan, William J.; Jimison, Holly B.; Piziali, Robert; and Ream, Allen K., 4,448,192, Cl. 128-204.260.

Hibino, Takashi; and Ito, Yoshinori, to Hoshizaki Electric Co., Ltd. Ice-making and fresh water dispensing apparatus. 4,448,032, Cl. 62-124.000.
Hidaka, Yoshiaki; and Tsuchiyama, Tadashi, to Honda Giken Kogyo Kabushiki Kaisha. V-Type internal combustion engine. 4,448,159, Cl. 123-195.00C.
Hider, Robert C.: *See*—
Ash, Philip S.; and Hider, Robert C., 4,448,765, Cl. 424-14.000.
Hijikata, Kazuo: *See*—
Banno, Taiichi; Fujimori, Ryo; Takekawa, Hiroshi; and Hijikata, Kazuo, 4,448,752, Cl. 422-81.000.
Hilhorst, Jacques J.; and Stillie, Donald G., to AMP Incorporated. Transparent switch having fine line conductors. 4,449,023, Cl. 200-159.00B.
Hill, Frank W.; May, William L.; and Kent, Willard L., to Gulf & Western Manufacturing Company. Actuated digital pretimed traffic controller. 4,449,116, Cl. 340-909.000.
Hillebrand, George A.; and Paar, Michael S., to Eaton Corporation. Guide for roller cam follower. 4,448,155, Cl. 123-90.500.
Hilti Aktiengesellschaft: *See*—
Graf, Eugen; and Kindle, Edwin, 4,448,338, Cl. 227-8.000.
Kousek, Heinz; and Wohlwend, Ernst, 4,448,261, Cl. 173-12.000.
Hilton-Davis Chemical Co., The: *See*—
Crounse, Nathan N., 4,448,722, Cl. 260-245.100.
Hinden, Jean M.: *See*—
Gauger, Jurgen F.; Hinden, Jean M.; and Katz, Michael, 4,448,803, Cl. 427-58.000.
Hinkamp, James B.; and Hanlon, John V., to Ethyl Corporation. Synergistic cetane improver. 4,448,587, Cl. 44-57.000.
Hirabayashi, Tsugio: *See*—
Fujii, Yozo; Sakaguchi, Hirofumi; and Hirabayashi, Tsugio, 4,448,514, Cl. 355-8.000.
Hirai, Kiyomiki: *See*—
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Hirashi, Masanori; and Sugata, Masashi, to Daicel Chemical Industries, Ltd. Etching method of conductive film. 4,448,637, Cl. 156-635.000.
Hirano, Shigeo: *See*—
Yamamuro, Kiyohiko; Hirano, Shigeo; and Iwasa, Yasuo, 4,448,878, Cl. 430-507.000.
Hirasawa, Kotaro: *See*—
Kuzunuki, Soshiro; and Hirasawa, Kotaro, 4,448,286, Cl. 187-29.00R.
Hirayama, Kazuhiro; Sato, Yasushi; Mochizuki, Noritaka; and Masaki, Katsumi, to Canon Kabushiki Kaisha. Image information recording apparatus. 4,448,513, Cl. 355-8.000.
Hiroshige, Nakayama. Straw-equipped liquid drink container. 4,448,316, Cl. 215-1.00A.
Hiruma, Katumi: *See*—
Nakajima, Nobuyuki; and Hiruma, Katumi, 4,448,356, Cl. 239-533.500.
Hitachi Chemical Co., Ltd.: *See*—
Osada, Yuichi; Kasai, Shozo; Okada, Yasunori; Uchigasaki, Isao; Oshima, Toyoji; Mukoyama, Yoshiyuki; and Nishizawa, Hiroshi, 4,448,844, Cl. 428-375.000.
Hitachi Construction Machinery Co., Ltd.: *See*—
Ishikawa, Yasuaki; Ajiro, Shuichi; and Wada, Masami, 4,448,269, Cl. 175-335.000.
Hitachi, Ltd.: *See*—
Kashiwaya, Mineo; Yamada, Kinsaku; Tanabe, Yoshiyuki; Oyama, Yoshishige; Kuroiwa, Hiroshi; and Tsuruta, Hisato, 4,448,172, Cl. 123-494.000.
Kimura, Tomoaki, 4,448,236, Cl. 164-423.000.
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Kuzunuki, Soshiro; and Hirasawa, Kotaro, 4,448,286, Cl. 187-29.00R.
Motojima, Kenji; and Kawamura, Fumio, 4,448,711, Cl. 502-74.000.
Ohshima, Yoshimitsu; Yokozawa, Norio; and Ohzeki, Masayoshi, 4,449,180, Cl. 364-147.000.
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Sato, Kazuo; Ohmori, Motoji; Takasumi, Masakazu; Shiga, Motohiro; Shiohata, Koki; and Fujisawa, Fumio, 4,448,077, Cl. 73-660.000.
Sato, Yukihiro; and Shibuya, Yoshimichi, 4,448,489, Cl. 350-330.000.
Shibuya, Yoshimichi; and Takahashi, Masami, 4,448,490, Cl. 350-335.000.
Watanabe, Michinori, 4,448,369, Cl. 242-195.000.
Yamaguchi, Kiyoshi; and Maki, Naoki, 4,448,042, Cl. 62-505.000.
Ho, Nelson: *See*—
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Hobart Corporation: *See*—
Meyers, Theodore F., 4,448,359, Cl. 241-46.060.
Hobbs, Charles F., to Monsanto Company. Catalyst and reverse disproportionation process. 4,448,894, Cl. 502-249.000.
Hodgson, Dale A., to Bright of America. Display package of page-markers. 4,448,310, Cl. 206-526.000.
Hoechst AG.: *See*—
Schindler, Peter; and Huber, Gerhard, 4,448,880, Cl. 435-18.000.
Hoechst Aktiengesellschaft: *See*—
Becker, Wilhelm; and Manz, Albrecht, 4,448,912, Cl. 523-414.000.
Berthold, Joachim; Diedrich, Bernd; Franke, Rainer; Hartlapp, Jurgen; Schafer, Werner; and Strobel, Wolfgang, 4,448,944, Cl. 526-119.000.
Diery, Helmut; and Mees, Bernhard, 4,448,992, Cl. 564-347.000.
Gunther, Dieter, 4,448,988, Cl. 564-95.000.
Schumacher, Hans; Albrecht, Konrad; and Heinrich, Rudolf, 4,448,602, Cl. 71-90.000.
Willms, Lothar; Gunther, Dieter; and Huttelmaier, Thomas, 4,448,731, Cl. 260-545.00R.
Hoechst-Roussel Pharmaceuticals, Inc.: *See*—
Glamkowski, Edward J.; and Fortunato, James M., 4,448,784, Cl. 424-274.000.
Hoehn, Gustave L., to Mobil Oil Corporation. Recording decimated magnetotelluric measurements with coherence. 4,449,099, Cl. 324-350.000.
Hoffman, Charles R., to International Business Machines Corporation. Dynamic RAM with non-volatile back-up storage and method of operation thereof. 4,449,205, Cl. 365-182.000.
Hoffman, Douglas R.: *See*—
Felix, Ronald G.; and Hoffman, Douglas R., 4,448,473, Cl. 339-99.00R.
Hoffman, Kenneth F.: *See*—
Eberhardt, H. Alfred; Hoffman, Kenneth F.; and Petersen, Raymond R., 4,448,256, Cl. 169-15.000.
Hoffmann, Harald; and Raducanu, Dan-Cornelis, to Braun Aktiengesellschaft. Method and apparatus for controlling and regulating a motor with a permanent magnetic rotor. 4,449,086, Cl. 318-696.000.
Hoffmann-La Roche Inc.: *See*—
Brodbeck, Hans; and Gallati, Harald, 4,448,882, Cl. 435-188.000.
Bruderer, Hans; Fischli, Albert E.; and Pfister, Rudolf, 4,448,991, Cl. 564-171.000.
Hofinger, Hans-Peter: *See*—
Wieser, Franz; and Hofinger, Hans-Peter, 4,448,796, Cl. 427-4.000.
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Gragg, Frederick M.; Shen, Jian C.; and Jacobson, Carl L., 4,448,249, Cl. 166-251.000.

Jaffe, Michael B.; Luper, Charles R.; Mabry, Eric; and Reid, Howard J., to Sensormedics Corporation. Respiratory gas analysis instrument having improved volume calibration method and apparatus. 4,448,058, Cl. 73-23.000.

Jakob, Wolfgang: *See*—
Schulte, Bernhard; Jakob, Wolfgang; Dunwald, Willi; and Meyer, Karl-Heinrichrich, 4,448,942, Cl. 525-540.000.

Jakubowski, Heinz: *See*—
Muller, Ortwin; Biber, Klaus; Jakubowski, Heinz; and Hanemann, Gerhard, 4,448,498, Cl. 350-516.000.

Jakubowski, James J.; Meyer, Victor E.; and Pelletier, Ronald R., to Dow Chemical Company, The. Halogenated polar polymer treatment of inorganic fillers. 4,448,845, Cl. 428-404.000.

Jalil, Asjed A.; Winslow, Earl S., Jr.; and Gage, Charles H., to Morgan Construction Company. Apparatus for combined hot rolling and treating steel rod. 4,448,401, Cl. 266-78.000.

Jambor, Arno: *See*—
Schuech, Siegmund; Nagele, Karl-Heinz; Jambor, Arno; and Sacco, Bruno, 4,447,928, Cl. 15-250.210.

James Howden & Company Limited: *See*—
White, William W.; and MacDonald, Ian N., 4,448,552, Cl. 384-404.000.

James River-Dixie/Northern, Inc.: *See*—
Klowak, Bernard G., 4,448,638, Cl. 162-112.000.

Janata, Jiri: *See*—
Kratochvil, Jiri; Ho, Nelson; and Janata, Jiri, 4,449,011, Cl. 174-52.0PE.

Jannard, James H., to Oakley, Inc. Goggle. 4,447,914, Cl. 2-432.000.

Jantzen, Daniel E.: *See*—
Polak, Paul R.; and Jantzen, Daniel E., 4,448,110, Cl. 91-275.000.

Japan Exlan Company Limited: *See*—
Sawanishi, Shigeru; Shiomi, Yozo; and Yamane, Akira, 4,448,740, Cl. 264-182.000.

Japan Marine Machinery Development Association: *See*—
Senoo, Akira; Nezu, Yuzo; Ito, Masanori; Nagano, Hironobu; and Aire, Tatsuo, 4,448,144, Cl. 114-102.000.

Japan Synthetic Rubber Co., Ltd.: *See*—
Abe, Mitsuo; Tsuchikawa, Syuji; Fukuta, Teizo; and Asakawa, Tsugio, 4,448,580, Cl. 525-71.000.

Jasserand, Daniel: *See*—
Heinemann, Henning; Jasserand, Daniel; Milkowski, Wolfgang; Yavordios, Dimitri; and Zeugner, Horst, 4,448,777, Cl. 424-250.000.

Jeck, Arnulf: *See*—
Dressel, Manfred; Greven, Johannes; Jeck, Arnulf; Magin, Rudolf; Nick, Gunther; Schaffarczyk, Paul; and Weiss, Guenther, 4,448,080, Cl. 73-799.000.

Jenkins, John W.; and Wolstenholme, John, to Johnson Matthey Public Limited Company. Colored inorganic complex for use as a pigment and compositions containing it. 4,448,608, Cl. 106-292.000.

Jeppson, Jan B.; and Pollak, Zoltan, to AB Akerlund & Rausing. Container closure having weaker opening means. 4,448,324, Cl. 220-266.000.

Jeschke, Willi; Rambausek, Hugo; Uhrig, Rudolf-Karl; and Loffler, Gerhard, to Heidelberger Druckmaschinen. Apparatus for ensuring the quality of printed products. 4,448,533, Cl. 356-416.000.

Jessop, Thomas C., to Eastman Kodak Company. Incremental metering device having reset means. 4,448,335, Cl. 222-391.000.

Jimison, Holly B.: *See*—
Stawitcke, Frederick A.; Mordan, William J.; Jimison, Holly B.; Piziali, Robert; and Ream, Allen K., 4,448,192, Cl. 128-204.260.

JOBO Labortechnik GmbH & Co. KG.: *See*—
Petsching, Helmut; Kremer, Walter; Bernhardt, Rainer; and Bockemuehl-Simon, Johannes J., 4,448,365, Cl. 242-71.800.

Johannes Schaefer vormals Stettiner Schraubenwerke GmbH & Co. KG: *See*—
Funk, Hans G.; Neumann, Frank; and Schaefer, Dankmar, 4,448,447, Cl. 285-4.000.

Johannesen, Donald D.: *See*—
Ritsema, Irving R.; and Johannesen, Donald D., 4,448,291, Cl. 188-218.0XL.

John, Sam J.: *See*—
Lollis, Glen R.; Marler, Marvin G.; Car, Joe P.; and John, Sam J., 4,448,340, Cl. 228-29.000.

Johnson, David E., to Mobil Oil Corporation. Method and apparatus for producing foamed products from a mix of reclaimed plastic foam material and foamable virgin plastic resin. 4,448,737, Cl. 264-53.000.

Johnson, David F., to American Artos Corporation. Process for continuous thermosol dyeing of textile fabrics. 4,448,582, Cl. 8-149.100.

Johnson, J. Ralph. Method of and apparatus for the tape loading and use of a single turntable in the rendition of a taped program. 4,448,362, Cl. 242-55.19R.

Johnson, James H. Automatic or semi-automatic firearm. 4,448,109, Cl. 89-141.000.

Johnson, James R. Boot for walking on soft materials. 4,447,969, Cl. 36-116.000.

Johnson, Leopold J.; and Carson, David L., to United States of America, Navy. Sonar compensation transformer. 4,449,068, Cl. 310-316.000.

Johnson Matthey Public Limited Company: *See*—
Jenkins, John W.; and Wolstenholme, John, 4,448,608, Cl. 106-292.000.

Johnson, Robert C.; Nation, Thomas C.; and Perry, David L., to Ford Motor Company. Ignition system tester. 4,449,100, Cl. 324-378.000.

Johnson, Steven L.; McLaren, George; and Robertson, George H., to Sun Chemical Corporation. Conditioning crude phthalocyanine pigments. 4,448,607, Cl. 106-19.000.

Johnston, James D.: *See*—
Flanagan, James L.; and Johnston. James D., 4,449,190, Cl. 364-513.500.

Johnston, Robert F.: *See*—
Frystak, Richard; Johnston, Robert F.; and Flint, John R., 4,448,364, Cl. 242-674.000.

Jones, John E.: *See*—
Glenn, William K., III; Jones, John E.; Laing, Gordon E.; and Sumerau, William R., 4,447,930, Cl. 15-322.000.

Jones, Larry L., Jr.; and Cockrell, Star D. Adjustable music/book holder. 4,448,384, Cl. 248-443.000.

Jones, Robert A., to Catalog Corporation of America, Inc. Continuous form book processing kit. 4,448,443, Cl. 281-5.000.

Jones, Stanley P.: *See*—
Braithwaite, David; and Jones, Stanley P., 4,448,600, Cl. 65-360.000.

Jop, Fiorenzo. Electronic circuit for controlling the supply voltage of electromagnets, electric motors, resistors, in single- and three-phase systems. 4,449,054, Cl. 307-31.000.

Joseph, David A.; and Eldredge, Peter G., to KLA Instruments Corporation. Automatic photomask inspection method and system. 4,448,532, Cl. 356-394.000.

Joseph, Joseph P.: *See*—
Dusza, John P.; Joseph, Joseph P.; and Bernstein, Seymour, 4,448,973, Cl. 548-362.000.

Jullien, Renee; and Benayache, Samir, to Roussel Uclaf. Preparation of cis ester-nitrile cyclopropane compounds. 4,448,728, Cl. 260-464.000.

Kabushiki Kaisha Kobe Seiko Sho: *See*—
Moritoki, Masato; Fujikawa, Takao; and Miyanaga, Junichi, 4,448,747, Cl. 419-49.000.

Kabushiki Kaisha Komatsu Seisakusho: *See*—
Abe, Riichi; Tsuruta, Katsuji; and Tsujikado, Seiji, 4,448,342, Cl. 228-102.000.
Baba, Kiyokazu, 4,448,056, Cl. 72-422.000.
Maeda, Fujio, 4,448,293, Cl. 192-3.300.

Kabushiki Kaisha Tokai Rika Denki Seisakusho: *See*—
Nakaho, Junichi, 4,448,488, Cl. 350-278.000.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See*—
Arakawa, Hiroshi, 4,448,222, Cl. 139-435.000.

Kabushiki Kaisha Toyota Chuo Kenkyusho: *See*—
Kondo, Haruyoshi; and Takeuchi, Masaharu, 4,448,059, Cl. 73-35.000.

Kaes, Gertrude, to Lang & Co., Chemisch-Technische Produkte Kommanditgesellschaft. Freezing-point-lowering composition and method. 4,448,702, Cl. 252-70.000.

Kaga, Takashi; and Kobayashi, Nobuo, to Tomy Kogyo Co., Inc. Cartesian diving toy. 4,448,409, Cl. 272-8.00N.

Kageyama, Masahide; and Fujita, Takeshi, to Canon Kabushiki Kaisha. Coating method. 4,448,798, Cl. 427-8.000.

Kageyama, Yoichi; Onuma, Kazuhiko; Kawakami, Toshihiro; and Suzuki, Makoto, to Mitsubishi Chemical Ind., Ltd.; and Asia Oil Company Limited. Hydrogenation catalyst for desulfurization and removal of heavy metals. 4,448,896, Cl. 502-314.000.

Kakehi, Sasuga; Nakagawa, Nobuhiko; Adachi, Hideo; and Takaya, Tadashi, to Murata Manufacturing Co., Ltd. Piezoelectric loudspeaker. 4,449,019, Cl. 179-110.00A.

Kali-Chemie Pharma GmbH: *See*—
Heinemann, Henning; Jasserand, Daniel; Milkowski, Wolfgang; Yavordios, Dimitri; and Zeugner, Horst, 4,448,777, Cl. 424-250.000.

Kalkhof, Bernd: *See*—
Bodig, Bernd; Hohne, Gerd; and Kalkhof, Bernd, 4,448,180, Cl. 123-618.000.

Kamata, Shigeru: *See*—
Isobe, Takashi; and Kamata, Shigeru, 4,448,496, Cl. 350-430.000.
Katsuma, Makoto; Kamata, Shigeru; Saito, Syuichiro; Kawamura, Masaharu; and Akashi, Akira, 4,448,509, Cl. 354-286.000.

Kamatani, Yoshio: *See*—
Miyake, Jun-ichi; Yamazaki, Kyuya; and Kamatani, Yoshio, 4,448,947, Cl. 528-73.000.

Kamhi, Ralph. Device for processing paper money. 4,449,050, Cl. 250-455.100.

Kamio, Kazuyoshi: *See*—
Fujikawa, Tsuneo; Kamio, Kazuyoshi; and Takagishi, Haruyoshi, 4,448,341, Cl. 228-45.000.

Kane, Michael W. Wire stripper. 4,447,949, Cl. 30-90.600.

Kane, Thomas J.: *See*—
Buckner, Carrol E.; Cook, Clarence G.; and Kane, Thomas J., 4,448,185, Cl. 126-193.000.

Kanebo Ltd.: *See*—
Ikeda, Shoji; Sakamoto, Fumio; Tsukamoto, Goro; and Yamabe, Shigeru, 4,448,769, Cl. 424-114.000.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See*—
Senda, Kenichi; Ando, Masao; Nakamura, Kyoichi; Mori, Kiyoshi; and Nishida, Tatehiko, 4,448,901, Cl. 521-60.000.

Kanmoto, Yoshiaki: *See*—
Yokota, Takashi; Yamazaki, Shigeru; Kanmoto, Yoshiaki; Kawazu, Motoaki; Murayama, Noboru; and Abe, Daisuke, 4,449,151, Cl. 358-293.000.

Kansai Paint Company: *See*—
Murase, Heihachi, 4,448,919, Cl. 524-394.000.

Kansas State University Research Foundation: *See*—
Fan, Liang-tseng; and Walawender, Walter P., 4,448,589, Cl. 48-197.00R.

Kanzaki, Michio, to Fuji Xerox Co., Ltd. Subassembly withdrawing device in a copying machine. 4,448,523, Cl. 355-133.000.

Kapmeyer, Wolfgang: *See*—
Pauly, Hans-Erwin; Kapmeyer, Wolfgang; and Seitz, Ulrich, 4,448,908, Cl. 523-201.000.

Kapolas, William J., to Continental White Cap, Inc. Closure with plastiol liner defining a retaining bead. 4,448,320, Cl. 215-346.000.

Karanewsky, Donald S., to E. R. Squibb & Sons, Inc. Phosphinylmethylaminosocarbonyl imino acid compounds useful for treating hypertension. 4,448,772, Cl. 424-200.000.

Karasuno, Isamu: *See*—
Kubo, Toshihiko; Ichidate, Minoru; Tamura, Eijiro; Karasuno, Isamu; and Umino, Masahide, 4,448,746, Cl. 419-31.000.

Karger, Ludwig; and Lippert, Hans-Joachim, to Kraftwerk Union Aktiengesellschaft. Method of loading and/or unloading a nuclear reactor, and support member, especially for the foregoing method. 4,448,744, Cl. 376-262.000.

Karl Mayer Textilmaschinenfabrik GmbH: *See*—
Mista, Kresimir; and Hohne, Hans-Jurgen, 4,448,046, Cl. 66-205.000.

Karl Schmidt GmbH: *See*—
Bauer, Wolfgang; and Grosser, Werner, 4,448,091, Cl. 74-552.000.

Karnofsky, George B., to Dravo Corporation. Process for solvent extraction of bitumen from oil sand. 4,448,667, Cl. 208-11.0LE.

Kasai, Shozo: *See*—
Osada, Yuichi; Kasai, Shozo; Okada, Yasunori; Uchigasaki, Isao; Oshima, Toyoji; Mukoyama, Yoshiyuki; and Nishizawa, Hiroshi, 4,448,844, Cl. 428-375.000.

Kasegawa, Norimichi: *See*—
Kitagawa, Junji; Akita, Shigeyuki; Kasegawa, Norimichi; and Nakamura, Akira, 4,448,275, Cl. 180-79.100.

Kashiwaya, Mineo; Yamada, Kinsaku; Tanabe, Yoshiyuki; Oyama, Yoshishige; Kuroiwa, Hiroshi; and Tsuruta, Hisato, to Hitachi, Ltd. Fuel injection apparatus. 4,448,172, Cl. 123-494.000.

Katagiri, Masayoshi; and Kondo, Toshio, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Aisin Seiki Kabushiki Kaisha. Caliper housing in a disc brake. 4,448,287, Cl. 188-73.310.

Katayama, Nobuaki: *See*—
Ikemoto, Kazuhito; Katayama, Nobuaki; Terakura, Yukio; and Sasaki, Kan, 4,448,089, Cl. 74-467.000.

Katayama, Shitomi: *See*—
Senaha, Susumu; Kyo, Suizo; Shimomura, Susumu; Akagami, Akira; Imai, Hiroshi; Ohno, Akira; Katayama, Shitomi; and Nomura, Suguru, 4,448,855, Cl. 428-632.000.

Kathawala, Faizulla G.; and Heider, John G., to Sandoz, Inc. N-Unsaturated fatty acid amides of tryptophan ester homologues and anti-cholesteric use thereof. 4,448,785, Cl. 424-274.000.

Kato, Seiichi: *See*—
Hama, Hiroaki; Imanishi, Masami; Funahashi, Yasuyuki; and Kato, Seiichi, 4,448,037, Cl. 62-188.000.

Kato, Tomokazu, to Ricoh Company, Ltd. Method of processing medium tone picture. 4,449,150, Cl. 358-283.000.

Katsuma, Makoto; Kamata, Shigeru; Saito, Syuichiro; Kawamura, Masaharu; and Akashi, Akira, to Canon Kabushiki Kaisha. Interchangeable lens barrel with signal transfer contacts. 4,448,509, Cl. 354-286.000.

Katz, Michael: *See*—
Gauger, Jurgen F.; Hinden, Jean M.; and Katz, Michael, 4,448,803, Cl. 427-58.000.

Kauffman, Ivan L.; and Allen, Robert J., to Ex-Cell-O Corporation. Forming, filling and sealing machine. 4,448,012, Cl. 53-563.000.

Kauffman, Robert E.; Rhine, Wendell E.; and Saba, Costandy S., to United States of America, Air Force. Method for the particle size independent spectrometric determination of metal particles in lubricating oils and hydraulic fluids. 4,448,887, Cl. 436-60.000.

Kaufman, Lance R. Compact circuit package having an improved lead frame connector. 4,449,165, Cl. 361-386.000.

Kawabe, Toshihiko: *See*—
Amemori, Koichi; and Kawabe, Toshihiko, 4,448,166, Cl. 123-445.000.

Kawaguchi, Katuhiko: *See*—
Matsuda, Susumu; and Kawaguchi, Katuhiko, 4,448,559, Cl. 400-637.400.

Kawaguchi, Shoichi; and Sugiyama, Hiroyuki, to Komori Printing Machinery Co., Ltd. Sheet-fed rotary printing machine with a turnover mechanism. 4,448,125, Cl. 101-185.000.

Kawakami, Susumu: *See*—
Totoki, Takashi; and Kawakami, Susumu, 4,449,060, Cl. 307-247.00R.

Kawakami, Toshihiro: *See*—
Kageyama, Yoichi; Onuma, Kazuhiko; Kawakami, Toshihiro; and Suzuki, Makoto, 4,448,896, Cl. 502-314.000.

Kawamura, Fumio: *See*—
Motojima, Kenji; and Kawamura, Fumio, 4,448,711, Cl. 502-74.000.

Kawamura, Masaharu: *See*—
Katsuma, Makoto; Kamata, Shigeru; Saito, Syuichiro; Kawamura, Masaharu; and Akashi, Akira, 4,448,509, Cl. 354-286.000.

Kawamura, Tamio: *See*—
Negi, Shigeto; Machida, Yoshimasa; Yamauchi, Hiroshi; Saito, Isao; Hasagawa, Yoshikazu; and Kawamura, Tamio, 4,448,775, Cl. 424-246.000.
Sato, Akio; Nakajima, Kenji; Takahara, Yoshimasa; Kijima, Shizumasa; Watanabe, Hideaki; Kawamura, Tamio; and Nagai, Yasushi, 4,449,002, Cl. 568-28.000.

Kawamura, Yoshimi: *See*—
Tanaka, Kentaro; Kondo, Eiji; Mayama, Mikao; Matsumoto, Kouichi; Kawamura, Yoshimi; and Tsuji, Naoki, 4,448,723, Cl. 260-245.20T.

Kawauchi, Noboru: *See*—
Kuwabara, Eiji; Sakata, Takayoshi; Kawauchi, Noboru; Ide, Yuuichi; and Matsuo, Takeshi, 4,448,597, Cl. 62-176.600.

Kawazu, Motoaki: *See*—
Yokota, Takashi; Yamazaki, Shigeru; Kanmoto, Yoshiaki; Kawazu, Motoaki; Murayama, Noboru; and Abe, Daisuke, 4,449,151, Cl. 358-293.000.

Kawneer Company, Inc.: *See*—
Whitmyer, Wayne E.; and Matthews, Thomas E., 4,448,001, Cl. 52-209.000.

Kayama, Ikuo: *See*—
Ikeda, Eiichi; Kayama, Ikuo; and Izaki, Masahiro, 4,448,837, Cl. 428-215.000.

KB Denver, Inc.: *See*—
Stracener, Steve W., 4,449,024, Cl. 200-317.000.

Keck, Dale R.: *See*—
Rubinson, Barry L.; Gardner, Edward A.; Grace, William A.; Lary, Richard F.; and Keck, Dale R., 4,449,182, Cl. 364-200.000.

Keeling, Ronald J.; Roe, Jin-Young K.; and Mollmann, Henry C., to American Cyanamid Company. Hydroxylalkylmelamine containing resins and their use in heat and pressure consolidated laminates. 4,448,849, Cl. 428-503.000.

Keever, Joseph M.: *See*—
MacFadden, John A.; Keever, Joseph M.; and Zisa, William J., 4,449,094, Cl. 324-152.000.

Keller, Alex J.; Williams, Joseph R.; Fechner, Erhard A.; Pinto, Akiva; King, James A., Jr.; Crawford, Charles D.; and Maness, Riley C., to Platt Saco Lowell Corporation. Method and apparatus for feeding, weighing and releasing fiber. 4,448,272, Cl. 177-1.000.

Keller, Hans-Hermann: *See*—
Brummer, Hans J.; Bose, Karlheinz; Knothe, Frank; Keller, Hans-Hermann; and Wallenstowitz, Henning, 4,448,441, Cl. 280-691.000.

Keller, Jean-Paul. Process for quick freezing and conditioning individual products, and apparatus for practicing this process. 4,448,029, Cl. 62-63.000.

Keller, Viktor R.; Linev, Valery D.; Mittsev, Sergei G.; Zhivov, Mikhail Z.; Pelts, Boris B.; Popov, Alexandr N.; Rozenberg, Vladimir L.; Burochkin, Alexandr E.; Romanenkov, Jury A.; and Onischin, Boris P. Ore-smelting electrical furnace bath. 4,449,221, Cl. 373-44.000.

Kelley, Brian D.; and Stewart, Patrick H., to CL Industries, Inc. Method for forming sand cores and molds. 4,448,234, Cl. 164-16.000.

Kelly, Guy M.; Roes, John B.; Walker, Samuel B.; and Beach, Bruce A., to Cubic Western Data. Touch panel passenger self-ticketing system. 4,449,186, Cl. 364-407.000.

Kendall Company, The: *See*—
Taylor, Glenn N., 4,447,939, Cl. 128-760.000.

Kennel, John M., to United States of America, Air Force. Temperature controlled gyro. 4,448,086, Cl. 74-5.00R.

Kent, Willard L.: *See*—
Hill, Frank W.; May, William L.; and Kent, Willard L., 4,449,116, Cl. 340-909.000.

Kern, Josef, to Heinrich Josef Winter, Firma. Screw cap. 4,448,319, Cl. 215-329.000.

Kernforschungszentrum Karlsruhe GmbH: *See*—
Kiehling, Brigitte; and Holl, Wolfgang, 4,448,693, Cl. 210-673.000.

Kiba, Yasuo: *See*—
Hori, Takako; Yoshida, Chosaku; Kiba, Yasuo; Takeno, Ryuko; Nakano, Joji; Nitta, Jun; Kishimoto, Sumiko; Murakami, Shohachi; Tsuda, Hisatsugu; and Saikawa, Isamu, 4,448,963, Cl. 544-367.000.

Kidwell, William J. Dimensionally woven composite. 4,448,832, Cl. 428-113.000.

Kiehling, Brigitte; and Holl, Wolfgang, to Kernforschungszentrum Karlsruhe GmbH. Method for partially desalinating water with a weakly acid and strongly basic ion exchanger materials and subsequently regenerating the ion exchanger materials. 4,448,693, Cl. 210-673.000.

Kihara, Naoto: *See*—
Ogawa, Koji; Ohtsuki, Yoshihiko; Kudo, Yoshihiko; Maeda, Hideo; and Kihara, Naoto, 4,448,404, Cl. 269-21.000.

Kijima, Shizumasa: *See*—
Sato, Akio; Nakajima, Kenji; Takahara, Yoshimasa; Kijima, Shizumasa; Watanabe, Hideaki; Kawamura, Tamio; and Nagai, Yasushi, 4,449,002, Cl. 568-28.000.

Kiko Co., Ltd.: *See*—
Senaha, Susumu; Kyo, Suizo; Shimomura, Susumu; Akagami, Akira; Imai, Hiroshi; Ohno, Akira; Katayama, Shitomi; and Nomura, Suguru, 4,448,855, Cl. 428-632.000.

Kikuchi, Ko: *See*—
Endo, Haruyoshi; Makimoto, Mitsuo; Kikuchi, Ko; and Yamashita, Sadahiko, 4,449,108, Cl. 333-202.000.

Kikuchi, Yoshiki: *See*—
Kurata, Masami; Moriguchi, Fujio; Kikuchi, Yoshiki; Moriguchi, Haruhiko; and Ohmori, Takashi, 4,449,152, Cl. 358-296.000.

Killat, George R.; and Conklin, Jerry R., to Dow Chemical Company, The. Use of quaternized polyamidoamines as demulsifiers. 4,448,708, Cl. 252-344.000.

Kim, Bongsub, to BASF Wyandotte Corporation. Defoaming detergent additives containing bleached tallow acid phosphates. 4,448,706, Cl. 252-108.000.

Kimura, Junichi: *See*—
Hasegawa, Shumpei; Koumura, Takashi; Nakajima, Toyohei; Miyake, Junichi; and Kimura, Junichi, 4,448,177, Cl. 123-571.000.

Kimura, Tomoaki, to Hitachi, Ltd. Apparatus for producing thin metal sheet. 4,448,236, Cl. 164-423.000.

Kindle, Edwin: *See*—
Graf, Eugen; and Kindle, Edwin, 4,448,338, Cl. 227-8.000.

King, H. Hobson, to Mobil Oil Corporation. Method of making a load bearing surface using phosphogypsum and flyash. 4,448,566, Cl. 404-31.000.

King, James A., Jr.: *See*—
Keller, Alex J.; Williams, Joseph R.; Fechner, Erhard A.; Pinto, Akiva; King, James A., Jr.; Crawford, Charles D.; and Maness, Riley C., 4,448,272, Cl. 177-1.000.

King, Richard M., to Procter & Gamble Company, The. Catalytic hydrogenation of N,N-disubstituted amides to amines. 4,448,998, Cl. 564-488.000.

King Stone Co., Ltd.: *See*—
Sup, Kim Y., 4,448,305, Cl. 206-315.800.

Kinney, Timothy J.: *See*—
Doty, Warren R.; and Kinney, Timothy J., 4,448,811, Cl. 427-304.000.

Kinoshita, Akira: *See*—
Suzuki, Shinichi; Sawada, Kiyoshi; Kinoshita, Akira; Sasaki, Osamu; and Goto, Satoshi, 4,448,868, Cl. 430-58.000.

Kinugawa Rubber Industrial Co., Ltd.: *See*—
Yamaguchi, Toshiaki, 4,448,835, Cl. 428-147.000.

Kirchbrucher, Rudiger: *See*—
Becker, Kunibert; Kirchbrucher, Rudiger; and Elsner, Burckhard, 4,448,263, Cl. 173-34.000.

Kirchhoff, Werner: *See*—
Schulte, Heinz; and Kirchhoff, Werner, 4,448,862, Cl. 429-136.000.

Kirin Beer Kabushiki Kaisha: *See*—
Miyazawa, Takashi, 4,448,526, Cl. 356-237.000.

Kirisawa, Tadashi: *See*—
Ohyama, Yoshishige; Nishimura, Yutaka; Yamauchi, Teruo; Kuroiwa, Hiroshi; Ohsuga, Minoru; and Kirisawa, Tadashi, 4,448,070, Cl. 73-204.000.

Kiriseko, Tadashi: *See*—
Shibamata, Yoshiyuki; Onodera, Hideo; and Kiriseko, Tadashi, 4,449,037, Cl. 219-388.000.

Kirk, James F.: *See*—
Yannas, Ioannis V.; and Kirk, James F., 4,448,718, Cl. 260-123.700.

Kirkland, Joseph J.: *See*—
Dilks, Charles H., Jr.; Kirkland, Joseph J.; and Yau, Wallace W., 4,448,679, Cl. 209-155.000.

Kirwan, Robin W.: *See*—
Coleman, Ernest A.; Cronin, Kevin J.; Chu, Frank K.; and Kirwan, Robin W., 4,448,913, Cl. 523-455.000.

Kishimoto, Sumiko: *See*—
Hori, Takako; Yoshida, Chosaku; Kiba, Yasuo; Takeno, Ryuko; Nakano, Joji; Nitta, Jun; Kishimoto, Sumiko; Murakami, Shohachi; Tsuda, Hisatsugu; and Saikawa, Isamu, 4,448,963, Cl. 544-367.000.

Kitagawa, Junji; Akita, Shigeyuki; Kasegawa, Norimichi; and Nakamura, Akira, to Nippon Soken, Inc.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Torque sensor. 4,448,275, Cl. 180-79.100.

Kitagawa, Takaichi: *See*—
Ishida, Hiroshi; Kitagawa, Takaichi; Sumida, Yasuji; Nanba, Satoshi; and Tomi, Toshikaru, 4,448,519, Cl. 355-73.000.

Kitamoto, Tatsuji: *See*—
Yamada, Yasuyuki; Shirahata, Ryuji; Yanai, Akio; and Kitamoto, Tatsuji, 4,448,843, Cl. 428-336.000.

Kiwala, Jacob: *See*—
Klemarczyk, Philip T.; Dekker, Lambert; and Kiwala, Jacob, 4,449,008, Cl. 568-353.000.

KLA Instruments Corporation: *See*—
Joseph, David A.; and Eldredge, Peter G., 4,448,532, Cl. 356-394.000.

Klaubert, Dieter H.; Kreft, Anthony F., III; and Bell, Stanley C., to American Home Products Corporation. Leucotriene antagonists. 4,448,729, Cl. 260-465.00D.

Klees, Garry W., to Boeing Company, The. Turbine bypass turbojet with mid-turbine reingestion and method of operating the same. 4,448,019, Cl. 60-204.000.

Klein, Andrew: *See*—
Ozari, Yehuda; Nelsen, Suzanne B.; and Klein, Andrew, 4,448,932, Cl. 525-78.000.

Klein, Manfred: *See*—
Hennig, Kurt; Klein, Manfred; and Nuspl, Matthias, 4,447,929, Cl. 15-256.500.

Klein, Steven H.; and Smith, Alfred H., Jr., to General Electric Company. Shelf-stable catalyst component for RTV silicone composition. 4,448,928, Cl. 524-864.000.

Kleinecke, John D.; and Little, Thomas R., to Siemens-Allis, Inc. Defeatable handle and interlock for electrical equipment enclosure. 4,448,450, Cl. 292-210.000.

Klemarczyk, Philip T.; Dekker, Lambert; and Kiwala, Jacob, to International Flavors & Fragrances Inc. Substituted methyl isopropyl cyclohexenones, organoleptic uses thereof and process for preparing same. 4,449,008, Cl. 568-353.000.

Klenk, Dennis C.: *See*—
Smith, Paul K.; and Klenk, Dennis C., 4,448,764, Cl. 424-1.100.

Kling, Larry K., to Black & Decker Manufacturing Company, The. One shot firing circuit for power tools. 4,449,161, Cl. 361-152.000.

Klinner, Wilfred E., to National Research Development Corporation. Apparatus for cutting crop. 4,448,014, Cl. 56-13.600.

Klockner-Werke AG: *See*—
Fink, Lothar, 4,448,620, Cl. 156-125.000.

Klowak, Bernard G., to James River-Dixie/Northern, Inc. Paper webs having high bulk and absorbency and process and apparatus for producing the same. 4,448,638, Cl. 162-112.000.

KMS Fusion, Inc.: *See*—
Henderson, Timothy M., 4,448,884, Cl. 435-241.000.

Knapp, George W.; Spaulding, Bernard B.; and Tolbert, John T., to NCR Corporation. Full duplex integrated circuit communication controller. 4,449,202, Cl. 364-900.000.

Knapp, Richard D., to McDonnell Douglas Corporation. Method of identifying hard targets. 4,448,106, Cl. 89-1.00A.

Kniss, Helmut: *See*—
Engelbrecht, Hans-Christian; Kniss, Helmut; and Wessel, Wolf, 4,448,067, Cl. 73-119.00A.

Knorr, Gordon D.: *See*—
Wetmore, Sherman B.; and Knorr, Gordon D., 4,448,277, Cl. 180-127.000.

Knothe, Frank: *See*—
Brummer, Hans J.; Bose, Karlheinz; Knothe, Frank; Keller, Hans-Hermann; and Wallentowitz, Henning, 4,448,441, Cl. 280-691.000.

Knothe, George T.; and Mayfield, Robert A., to Unit Rig & Equip. Co. Shut-off cylinder for a supply accumulator of a hydraulic brake system. 4,448,458, Cl. 303-84.00A.

Kobari, Katsuo: *See*—
Kozai, Yoshinori; Kobari, Katsuo; and Sakamoto, Keiji, 4,449,177, Cl. 363-126.000.

Kobayashi, Nobuo: *See*—
Kaga, Takashi; and Kobayashi, Nobuo, 4,448,409, Cl. 272-8.00N.

Kobayashi, Ryohei: *See*—
Yamamoto, Toshiro; Kobayashi, Ryohei; Kurimoto, Mamoru; and Ozone, Toshio, 4,448,617, Cl. 148-36.000.

Kochert, Wilfried: *See*—
Bernhardt, Lutz; and Kochert, Wilfried, 4,449,239, Cl. 382-9.000.

Kochka, Edgar L.; Burack, Robert D.; and Pfeiffer, Kenneth E., to Westinghouse Electric Corp. Sleeve preparation method. 4,448,343, Cl. 228-205.000.

Kodal, Tassilo; and Kraus, Hubert, to Siemens Aktiengesellschaft. Electrical component member which is mounted in a housing centered and adjusted. 4,448,265, Cl. 174-52.0PE.

Koehler, Toivo: *See*—
Rotolante, Ralph A.; and Koehler, Toivo, 4,449,044, Cl. 250-211.00J.

Koerner, Ralph J., to Minnesota Mining and Manufacturing Company. Apparatus for detecting ferromagnetic material. 4,449,115, Cl. 340-941.000.

Koga, Hiroshi: *See*—
Irikura, Tsutomu; Suzue, Seigo; Ito, Akira; and Koga, Hiroshi, 4,448,962, Cl. 544-362.000.

Koga, Itsuo: *See*—
Isogai, Kiyoshi; Tobi, Nobuo; Koga, Itsuo; Takeuchi, Masahiko; Okamoto, Makoto; Ohmori, Nobuo; and Takita, Naka, 4,448,754, Cl. 422-179.000.

Kohler, Andreas, to Automation Industrielle SA. Metal-plastic laminate tube construction with plastic tube head. 4,448,829, Cl. 222-107.000.

Kohler, Kurt-Albrecht: *See*—
Trinks, Walter; and Kohler, Kurt-Albrecht, 4,448,128, Cl. 102-476.000.

Koike, Takashi: *See*—
Yamaya, Eisuke; Yamamoto, Osamu; Koike, Takashi; and Seino, Shunji, 4,448,921, Cl. 524-443.000.

Kojima, Masaru: *See*—
Mochida, Shigeru; and Kojima, Masaru, 4,448,828, Cl. 428-36.000.

Kojima, Yutaka: *See*—
Komada, Hideaki; Kojima, Yutaka; and Ohie, Tomonori, 4,448,168, Cl. 123-446.000.

Kolitsch, Jorg; Sparwell, Norbert; and Brockmann, Eugen, to Battelle-Institut e.V. Method and device for the dynamic and density-independent determination of mass flow. 4,448,081, Cl. 73-861.030.

Komada, Hideaki; Kojima, Yutaka; and Ohie, Tomonori, to Diesel Kiki Company, Ltd. Fuel injection system. 4,448,168, Cl. 123-446.000.

Komai, Kensaku: *See*—
Ohnishi, Souichi; and Komai, Kensaku, 4,449,154, Cl. 360-51.000.

Komori Printing Machinery Co., Ltd.: *See*—
Kawaguchi, Shoichi; and Sugiyama, Hiroyuki, 4,448,125, Cl. 101-185.000.
Uno, Chiyomatsu; and Muto, Hiroshi, 4,448,121, Cl. 101-76.000.

Kondo, Eiji: *See*—
Tanaka, Kentaro; Kondo, Eiji; Mayama, Mikao; Matsumoto, Kouichi; Kawamura, Yoshimi; and Tsuji, Naoki, 4,448,723, Cl. 260-245.20T.

Kondo, Haruyoshi; and Takeuchi, Masaharu, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Engine vibration sensor. 4,448,059, Cl. 73-35.000.

Kondo, Shigeru: *See*—
Nishino, Hisao; and Kondo, Shigeru, 4,449,173, Cl. 363-21.000.

Kondo, Syun-ichi; Sano, Kenji; and Sato, Hideo, to Fuji Photo Film Co., Ltd. Photoconductive composition and electrophotographic light-sensitive material using said composition. 4,448,869, Cl. 430-83.000.

Kondo, Toshio: *See*—
Katagiri, Masayoshi; and Kondo, Toshio, 4,448,287, Cl. 188-73.310.

Kondo, Yasuji: *See*—
Toyoshima, Shigeshi; Fujimura, Hajime; Ito, Shunsuke; and Kondo, Yasuji, 4,448,788, Cl. 424-313.000.

Kondo, Yoshiteru, to USM Corporation. Capacitor charging circuit for discharge type welding tool. 4,449,092, Cl. 323-271.000.

Konishiroku Photo Industry Co., Ltd.: *See*—
Fujii, Yozo; Sakaguchi, Hirofumi; and Hirabayashi, Tsugio, 4,448,514, Cl. 355-8.000.

Masuda, Keiji, 4,448,511, Cl. 355-3.0CH.
Suzuki, Shinichi; Sawada, Kiyoshi; Kinoshita, Akira; Sasaki, Osamu; and Goto, Satoshi, 4,448,868, Cl. 430-58.000.
Tamaki, Kiyoshi; Murata, Hideki; Terada, Sadatugu; Wada, Tsuneo; Matsubara, Akitoshi; and Takagiwa, Hiroyuki, 4,448,871, Cl. 430-109.000.

Kon'kov, Nikolaj G.: *See*—
Burov, Vadim K.; Vanjuskin, Boris M.; Voskoboev, Anatolij E.; Kon'kov, Nikolaj G.; Orechov, Vsevolod D.; Pismannik, Konstantin D.; Svin'in, Michail P.; Fedotov, Michail I.; Damerau, Werner; Dulling, Achim; Heger, Adolf; Reichardt, Gerd; and Wilde, Gotthard, 4,448,048, Cl. 68-5.00E.

Konnai, Makoto: *See*—
Takematsu, Tetsuo; Konnai, Makoto; Tachibana, Kunitaka; Tsuruoka, Takashi; Inouye, Shigeharu; and Watanabe, Tetsuro, 4,448,601, Cl. 71-86.000.

Konrad, Charles E.; and Clark, Robert C., deceased (by Clark, Jean B., executrix), to General Electric Company. Electric vehicle protection scheme. 4,449,080, Cl. 318-139.000.

Koomey, Inc.: *See*—
LeMoine, Joseph L., 4,448,394, Cl. 254-271.000.

Kopainsky, Jugen, to BBC Brown, Boveri & Company Limited. Data transmission network employing optical wave guide. 4,449,244, Cl. 455-603.000.

Korf Engineering GmbH: *See*—
Weber, Ralph; Rollinger, Bernt; Hauk, Rolf; Nagle, Michael; and Rinner, Bernhard, 4,448,402, Cl. 266-183.000.

Korhonen, Annika: *See*—
Sarkki, Marja-Leena; Soderstrom, Martti; Maunula, Hannu; and Korhonen, Annika, 4,448,790, Cl. 426-52.000.

Kornfeld, Edmund C.: *See*—
Bach, Nicholas J.; Kornfeld, Edmund C.; and Titus, Robert D., 4,448,990, Cl. 564-167.000.

Kortering, Randall L.; and Becker, Danny J., to Caterpillar Tractor Co. Roadable track shoe with sealed grouser. 4,448,459, Cl. 305-38.000.

Korting, Reinhard: *See*—
Mollenkopf, Hans; Wurr, Jurgen; and Korting, Reinhard, 4,447,966, Cl. 34-108.000.

Kosoff, Harold. Electrically-powered baby swing. 4,448,410, Cl. 272-86.000.

Kossel, Horst K., to Paradox International, Incorporated. Internal combustion engine. 4,448,154, Cl. 123-58.0BB.

Kotai, Ferenc; Spotzl, Markus; Drosen, Erich; and Pongratz, Leo, to Krauss-Maffei Aktiengesellschaft. Round-handling system for a mobile weapon. 4,448,107, Cl. 89-36.00K.

Kotecki, Damian J., to Teledyne Industries, Inc. Tubular composite arc welding electrode for vertical up welding of stainless steel and nickel-base alloys. 4,449,031, Cl. 219-146.230.

Koumura, Takashi: *See*—
Hasegawa, Shumpei; Koumura, Takashi; Nakajima, Toyohei; Miyake, Junichi; and Kimura, Junichi, 4,448,177, Cl. 123-571.000.

Kousek, Heinz; and Wohlwend, Ernst, to Hilti Aktiengesellschaft. Motorized hand tool for drilling. 4,448,261, Cl. 173-12.000.

Kovacs, Jenoe: *See*—
Sarnecki, Wilhelm; Kovacs, Jenoe; Loeser, Werner; Rudolf, Peter; and Vaeth, Guenter, 4,448,761, Cl. 423-632.000.

Kowa Company, Ltd.: *See*—
Shiratsuchi, Masami; Ishihama, Hiroshi; and Uchida, Yasumi, 4,448,989, Cl. 564-165.000.

Koyama, Tohru; Wajima, Motoyo; and Mukai, Junji, to Hitachi, Ltd. Thermosetting resin composition and prepolymer thereof. 4,448,940, Cl. 525-504.000.

Kozai, Yoshinori; Kobari, Katsuo; and Sakamoto, Keiji, to Fujitsu Fanuc Limited. Discharging circuit for power source device with rectifier circuit. 4,449,177, Cl. 363-126.000.

Kozawa, Tadashi, to Aisan Industry Co., Ltd. Canister for volatile fuel controlling device. 4,448,594, Cl. 55-387.000.

Kraftwerk Union Aktiengesellschaft: *See*—
Karger, Ludwig; and Lippert, Hans-Joachim, 4,448,744, Cl. 376-262.000.

Kraska, John L., to National Can Corporation. Metal container end. 4,448,322, Cl. 220-67.000.

Kratochvil, Jiri; Ho, Nelson; and Janata, Jiri, to Critikon, Inc. Method and apparatus for encapsulation of chemically sensitive field effect device. 4,449,011, Cl. 174-52.0PE.

Kraus, Hubert: *See*—
Kodal, Tassilo; and Kraus, Hubert, 4,448,265, Cl. 174-52.0PE.

Krause, Gerhard, to Erwin-Sick GmbH - Optik-Elektronik. Spectral analysis of a beam of radiation. 4,448,529, Cl. 356-310.000.

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Kotai, Ferenc; Spotzl, Markus; Drosen, Erich; and Pongratz, Leo, 4,448,107, Cl. 89-36.00K.

Kreft, Anthony F., III: *See*—
Klaubert, Dieter H.; Kreft, Anthony F., III; and Beil, Stanley C., 4,448,729, Cl. 260-465.00D.

Kremer, Walter: *See*—
Petsching, Helmut; Kremer, Walter; Bernhardt, Rainer; and Bockemuehl-Simon, Johannes J., 4,448,365, Cl. 242-71.800.

Krieg, Michael L., to International Business Machines Corporation. Method of printing and detecting optimum bar code test patterns. 4,449,052, Cl. 250-568.000.

Krishnan, Sivaram; and Lazear, Nelson R., to Mobay Chemical Corporation. Polycarbonate blends having an improved impact strength. 4,448,930, Cl. 525-67.000.

Kristinsson, Haukur, to Ciba-Geigy Corporation. Process for the preparation of 1,3,4-thiadiazolone derivatives. 4,448,968, Cl. 548-136.000.

Kromrey, Robert V., to United States of America, Air Force. Low cost thermal protection system processing. 4,448,742, Cl. 264-270.000.

Krones Aktiengesellschaft Hermann Kronseder Maschinenfabrik: *See*—
Reich, Gerhard; and Wenner, Michael, 4,448,300, Cl. 198-633.000.

Kroon, Dirk J.; and Robers, Klaas H. J., to U.S. Philips Corporation. Device for interactive video playback. 4,449,198, Cl. 364-900.000.

Kropp, Peter: *See*—
Demuth, Hans; Kropp, Peter; and Noll, Karl, 4,448,244, Cl. 165-141.000.

Kruger, Karl-Heinz: *See*—
Riesland, Eberhard; and Kruger, Karl-Heinz, 4,448,403, Cl. 269-21.000.

Krupp Polysius AG: *See*—
Mollenkopf, Hans; Wurr, Jurgen; and Korting, Reinhard, 4,447,966, Cl. 34-108.000.

Kubo, Toshihiko; Ichidate, Minoru; Tamura, Eijiro; Karasuno, Isamu; and Umino, Masahide, to Sumitomo Metal Industries, Ltd. Process for producing alloy steel powder. 4,448,746, Cl. 419-31.000.

Kubota Ltd.: *See*—
Sugitani, Junichi; Yoshimoto, Teruo; and Takahashi, Makoto, 4,448,749, Cl. 420-584.000.

Kudo, Shinichi; and Otani, Haruyuki, to Matsushita Electric Industrial Company. Pickup arm device. 4,449,216, Cl. 369-255.000.

Kudo, Yoshihiko: *See*—
Ogawa, Koji; Ohtsuki, Yoshihiko; Kudo, Yoshihiko; Maeda, Hideo; and Kihara, Naoto, 4,448,404, Cl. 269-21.000.

Kuhn, Patrick: *See*—
Ford, Arthur J.; Kuhn, Patrick; and Long, William D., 4,448,259, Cl. 172-462.000.

Kuhnert, Friedrich: *See*—
Bognar, Daniel; and Kuhnert, Friedrich, 4,448,126, Cl. 101-363.000.

Kuhnert, Gottfried, to Maschinenfabrik Dr. Rudolf Schieber GmbH & Co., KG. Slider needle. 4,448,044, Cl. 66-120.000.

Kuhnert, Gottfried, to Universal Maschinenfabrik Dr. Rudolf Schieber GmbH & Co. KG. Slider needle. 4,448,045, Cl. 66-120.000.

Kuiken, Hendrik K.; and Tijburg, Rudolf P., to U.S. Philips Corporation. Method of etching cavities and apertures in substrates and device for carrying out said method. 4,448,635, Cl. 156-637.000.

Kukes, Semyon G.; and Shioyama, Tod K., to Phillips Petroleum Company. Olefin oxidation catalyst. 4,448,892, Cl. 502-164.000.

Kung, Roger L.; Flannagan, Stephen T.; Spitz, Jonathan N.; Pelley, Perry H., III; Riley, Robert S.; and Covert, Douglas J., to Intel Corporation. Byte-wide dynamic RAM with multiplexed internal buses. 4,449,207, Cl. 365-230.000.

Kunugi, Yoshifumi, to Hitachi, Ltd. Absorption type heat pump system. 4,448,040, Cl. 62-238.300.

Kunz, Paul. Cleaning and peeling machine. 4,448,118, Cl. 99-624.000.

Kupferdraht-Isolierwerk AG Wildegg: *See*—
Voser, Othmar, 4,449,012, Cl. 174-70.00A.

Kurata, Masami; Moriguchi, Fujio; Kikuchi, Yoshiki; Moriguchi, Haruhiko; and Ohmori, Takashi, to Fuji Xerox Co., Ltd. Copying machine. 4,449,152, Cl. 358-296.000.

Kurby, Christopher N., to Motorola, Inc. Radio-frequency synthesizer for duplex radios. 4,449,250, Cl. 455-76.000.

Kureha Kagku Kagyo Kabushiki Kaisha: *See*—
Nagai, Hirosi; and Nishimura, Yasushi, 4,448,758, Cl. 423-308.000.

Kurek, Paul R., to UOP Inc. Reduction of C-nitrosoarylamines. 4,448,994, Cl. 564-416.000.

Kurimoto, Mamoru: *See*—
Yamamoto, Toshiro; Kobayashi, Ryohei; Kurimoto, Mamoru; and Ozone, Toshio, 4,448,617, Cl. 148-36.000.

Kuroda, Naoki; and Tsuge, Kimihiro, to Warner & Swasey Company, The. Work handling method. 4,448,099, Cl. 83-23.000.

Kuroiwa, Hiroshi: *See*—
Kashiwaya, Mineo; Yamada, Kinsaku; Tanabe, Yoshiyuki; Oyama, Yoshishige; Kuroiwa, Hiroshi; and Tsuruta, Hisato, 4,448,172, Cl. 123-494.000.
Ohyama, Yoshishige; Nishimura, Yutaka; Yamauchi, Teruo; Kuroiwa, Hiroshi; Ohsuga, Minoru; and Kirisawa, Tadashi, 4,448,070, Cl. 73-204.000.

Kuromatsu, Akio, to Ohyo Jiki Labolatory Company Ltd. Electrolytic/electric discharge machining of a non-conductive workpiece. 4,448,656, Cl. 204-129.400.

Kusayama, Masahiro, to Yoshida Kogyo K K. Slide fastener with separable bottom end stop. 4,447,936, Cl. 24-433.000.

Kusters, Eduard: *See*—
Appenzeller, Valentin; and Mingers, Peter F., 4,447,940, Cl. 29-116.0AD.

Kutcher, Howard R., to Aluminum Company of America. Vertical axis wind turbine. 4,449,053, Cl. 290-44.000.

Kuwabara, Eiji; Sakata, Takayoshi; Kawauchi, Noboru; Ide, Yuuichi; and Matsuo, Takeshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Air conditioning apparatus. 4,448,597, Cl. 62-176.600.

Kuwaki, Masami; Hatada, Youichi; and Umino, Satoru, to Fuji Electric Co., Ltd. Control system for automatic vending machines. 4,448,346, Cl. 236-46.00R.

Kuzunuki, Soshiro; and Hirasawa, Kotaro, to Hitachi, Ltd. Elevator group control system. 4,448,286, Cl. 187-29.00R.

Kwis, Stanley H.: *See*—
Fulde, Roland C.; and Kwis, Stanley H., 4,448,791, Cl. 426-94.000.

Kyo, Suizo: *See*—
Senaha, Susumu; Kyo, Suizo; Shimomura, Susumu; Akagami, Akira; Imai, Hiroshi; Ohno, Akira; Katayama, Shitomi; and Nomura, Suguru, 4,448,855, Cl. 428-632.000.

Kyorin Seiyaku Kabushiki Kaisha: *See*—
Irikura, Tsutomu; Sazue, Seigo; Ito, Akira; and Koga, Hiroshi, 4,448,962, Cl. 544-362.000.

Kyowa Hakko Kogyo Co., Ltd.: *See*—
Muto, Kenji; Watanabe, Minoru; Hatta, Takao; Sugaya, Toru; Takemoto, Yoshinori; and Nakamizo, Nobuhiro, 4,448,964, Cl. 546-194.000.

Kyrian, Bohumil, to BBC Brown, Boveri & Company, Limited. High power class B modulation amplifier for a broadcast transmitter. 4,449,103, Cl. 330-123.000.

Ladewski, Bernard F., to Auto Specialties Manufacturing Company. Thread stop for a screw jack. 4,448,392, Cl. 254-103.000.

Lafferty, Edwin C.: *See*—
Agnor, William C.; Lafferty, Edwin C.; and Toliver, Samuel, 4,449,104, Cl. 330-279.000.

Laido, Donald A. Alignment means for centrifugal blasting wheel. 4,447,993, Cl. 51-439.000.

Laing, Gordon E.: *See*—
Glenn, William K., III; Jones, John E.; Laing, Gordon E.; and Sumerau, William R., 4,447,930, Cl. 15-322.000.

LaMonica, Gaspare; Richelli, Federico, deceased; by Richelli, Angelo, heir; by Richelli, Giorgio, heir; by Richelli, Fabrizia, heir; by Richelli, Mauro, heir; and by Orini, Matilde, heir, to Samifi Babcock Samifi Internationale S.A. Pneumatic system for operating the mechanism of ice separation from evaporating plates in a plate or slab ice generator by using the condensing gas, simultaneously with circuit reversal for defrosting the ice product. 4,448,598, Cl. 62-352.000.

Lampert, Ingolf, to Wacker-Chemitronic Gesellschaft fur Elektronik-Grundstoffe mbH. Process for polishing III-V-semiconductor surfaces. 4,448,634, Cl. 156-636.000.

Lancki, Edmund: *See*—
Hanna, Craig A.; and Lancki, Edmund, 4,449,119, Cl. 340-347.0DD.

Landgraf, Wolfgang; Scharf, Walter; and Simon, Heinrich, to Schott-Zwiesel-Glaswerke Aktiengesellschaft. Method for grinding or polishing curved surfaces of solid bodies and apparatus for carrying out this method. 4,447,991, Cl. 51-161.000.

Lang & Co., Chemisch-Technische Produkte Kommanditgesellschaft: *See*—
Kaes, Gertrude, 4,448,702, Cl. 252-70.000.

Lankamp, Herman, to SKF Industrial Trading and Development Co., B.V. Lubricating composition and method of making same. 4,448,700, Cl. 252-12.400.

Laporte Industries Limited: *See*—
Tear, Brian; and Othen, David G., 4,448,609, Cl. 106-308.00N.

Lapp, Karl: *See*—
Stutz, Hansruedi; and Lapp, Karl, 4,447,955, Cl. 33-129.000.

Larson, Robert J., to Boeing Company, The. Aircraft vertical fin-fuselage structural integration system. 4,448,372, Cl. 244-87.000.

Larue, Albert D.: *See*—
Dougan, Donald R.; Larue, Albert D.; and Wolf, John J., 4,448,135, Cl. 110-263.000.

Lary, Richard F.: *See*—
Rubinson, Barry L.; Gardner, Edward A.; Grace, William A.; Lary, Richard F.; and Keck, Dale R., 4,449,182, Cl. 364-200.000.

Laserscope, Inc.: *See*—
Loeb, Marvin P., 4,448,188, Cl. 128-6.000.

Lasley, Robert A. Fluidic valve combination. 4,448,189, Cl. 128-25.00R.

Lasserre, Pierre P.: *See*—
Blanchard, Jean F.; and Lasserre, Pierre P., 4,448,779, Cl. 424-263.000.

Lathiaen, Richard A., to TRW Inc. Variable geometry optical fiber connector. 4,448,482, Cl. 350-96.210.

Lauber, Ernst: *See*—
Habegger, Willy; and Lauber, Ernst, 4,448,393, Cl. 254-264.000.

Lauke, Arno, to BASF Farben & Fasern A.G. Spray coating process, and an arrangement for carrying out the same. 4,448,812, Cl. 427-377.000.

Layton, Donald: *See*—
Perlman, Stanley; Herbert, William G.; Layton, Donald; and Hanafee, James S., 4,448,476, Cl. 339-203.000.

Lazear, Nelson R.: *See*—
Krishnan, Sivaram; and Lazear, Nelson R., 4,448,930, Cl. 525-67.000.

Lear Fan Corp.: *See*—
McClenahan, David H.; and Plumer, John A., 4,448,838, Cl. 428-251.000.

Lecomte, Jackie: *See*—
Bariol, Roger; Lecomte, Jackie; and Bouvet, Jean-Marie, 4,448,082, Cl. 73-861.050.

Lee, Byung H.; and Lynch, John F., Jr., to Bell Telephone Laboratories, Incorporated. Voice-actuated switching system. 4,449,238, Cl. 381-110.000.

Lee, Kung-You; Chiou, Jackson K.; and McMahon, Matthew A., to Texaco Inc. Apparatus and method for the production of gas filters. 4,448,822, Cl. 427-430.100.

Lee, Shih-Ying, to Setra Systems, Inc. Force transducer. 4,448,085, Cl. 73-862.640.

Lee, Shy-Fuh, to Zoecon Corporation. Substituted 2-pyridyloxy-phenoxy-alkanetriones. 4,448,966, Cl. 546-302.000.

Legner, Karl: *See*—
Ludke, Hans; Bahr, Albert; Mehrhoff, Friedrich-Wilhelm; and Legner, Karl, 4,448,681, Cl. 210-97.000.

Leinhos, Jurgen: *See*—
Wurth, Hans; and Leinhos, Jurgen, 4,448,055, Cl. 72-354.000.

Leland, John E., to Phillips Petroleum Company. Poly(arylene sulfide) composition containing titanium dioxide and 3-mercaptopropyltrimethoxysilane. 4,448,918, Cl. 524-262.000.

Leland Stanford Junior University, The Board of Trustees of the: *See*—
Clark, James H., 4,449,201, Cl. 364-900.000.

LeMoine, Joseph L., to Koomey, Inc. High low safety apparatus for drilling rigs. 4,448,394, Cl. 254-271.000.

Lemon, Gary K.: *See*—
Amelio, William J.; Lemos, Gary K.; Markovich, Voya; Panasik, Theodore; Sambucetti, Carlos J.; and Trevitt, Donna J., 4,448,804, Cl. 427-98.000.

Lenke, Gerd M.; Melby, Earl G.; and Fabris, Hubert J., to General Tire & Rubber Company, The. Polymerization of lactam with graft copolymer promoter. 4,448,956, Cl. 528-312.000.

Leonard, Eric M.: *See*—
Geyer, Frederick F.; and Leonard, Eric M., 4,449,139, Cl. 346-137.000.

Leonard, John J.: *See*—
Sofranko, John A.; and Leonard, John J., 4,448,985, Cl. 562-579.000.

Le Pargneux, Jacques, to Framatome. Screwed safety assembly. 4,448,561, Cl. 403-19.000.

Lesher, George Y., to Sterling Drug Inc. N-(Lower-alkyl)-N'-[5-(pyridinyl)-2-pyridinyl]ureas and cardiotonic use thereof. 4,448,780, Cl. 424-263.000.

Leslie, Samuel A.; and Schwartz, Robert C., to General Electric Company. Battery saving radio circuit and system. 4,449,248, Cl. 455-38.000.

Lesosky, Thomas, to Decor Doors Manufacturing Ltd. Adjustable threshold and sill assembly. 4,447,987, Cl. 49-468.000.

Leuven Research & Development: *See*—
Dewaegheneire, Gabriel, 4,448,147, Cl. 116-216.000.

LeVeen, Eric G.: *See*—
LeVeen, Harry H.; LeVeen, Eric G.; and LeVeen, Robert F., 4,448,195, Cl. 128-344.000.

LeVeen, Harry H.; LeVeen, Eric G.; and LeVeen, Robert F. Reinforced balloon catheter. 4,448,195, Cl. 128-344.000.

LeVeen, Robert F.: *See*—
LeVeen, Harry H.; LeVeen, Eric G.; and LeVeen, Robert F., 4,448,195, Cl. 128-344.000.

Lever Brothers Company: *See*—
Barby, Donald; Clarke, David E.; Lloyd, John; and Haq, Zia, 4,448,704, Cl. 252-91.000.

Levinson, Lionel M., to General Electric Company. Solderable largely base metal electrodes for metal oxide varistors. 4,448,806, Cl. 427-102.000.

Lewis, David F., to GAF Corporation. Electron beam sensitive mixture resist. 4,448,875, Cl. 430-283.000.

Lewis, Meirion F., to National Research Development Corporation. Methods of producing devices comprising metallized regions on dielectric substrates. 4,448,805, Cl. 427-100.000.

Liang, Tai-Ming; and Spitler, Keith G., to Mobay Chemical Corporation. Novel system for the production of polyurethanes. 4,448,903, Cl. 521-137.000.

Liao, Paul F.: *See*—
Bergman, John G.; Liao, Paul F.; and Wokaun, Alexander J., 4,448,485, Cl. 350-162.200.

Lichtenstein, Joseph, to Whitman Medical Corporation. Liquid crystal infiltration sensing system. 4,448,204, Cl. 128-736.000.

Lieber, Sidney: *See*—
Pinches, Philip B.; and Lieber, Sidney, 4,449,048, Cl. 250-308.000.

Liffmann, Stanley M.: *See*—
Neri, Bruce P.; Liffmann, Stanley M.; and Bergkuist, Carolyn, 4,448,889, Cl. 436-74.000.

Lillie, Jerry H.: *See*—
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Lilliston Corporation: *See*—
Ford, Arthur J.; Kuhn, Patrick; and Long, William D., 4,448,259, Cl. 172-462.000.

Lillwitz, Lawrence D., to Standard Oil Company (Indiana). Catalyzed hydrogenation of terephthalic acid to p-hydroxymethylbenzoic acid using a rhenium catalyst. 4,448,987, Cl. 562-473.000.

Lilly Industries Limited: *See*—
Clark, Barry P.; Ross, William J.; and Todd, Alec, 4,448,787, Cl. 424-283.000.

Lin, I. Sioun; Gromelski, Stanley J., Jr.; Hort, Eugene V.; Anderson, Lowell R.; and Williams, Earl P., to GAF Corporation. Alcohol substituted amides as chain extenders for polyurethanes. 4,448,905, Cl. 521-164.000.

Lindahl, George R., III; and Henrick, Clive A., to Zoecon Corporation. Substituted anilino pyrimidines. 4,448,961, Cl. 544-311.000.

Linde AG: *See*—
Linde, Gerhard, 4,448,592, Cl. 55-68.000.

Linde, Gerhard, to Linde AG. Adsorptive method for the separation of a gas mixture. 4,448,592, Cl. 55-68.000.

Lindner, Alfred; Volkamer, Klaus; and Wagner, Ulrich, to BASF Aktiengesellschaft. Isolation of isobutene from C_4-hydrocarbon mixtures containing isobutene. 4,448,643, Cl. 203-34.000.

Lindqvist, Lennart S. A., to Aktiebolaget Electrolux. Remotely controlled vacuum cleaner nozzle. 4,447,931, Cl. 15-365.000.

Lindsay, Erin J. Washer for paint rollers. 4,448,209, Cl. 134-141.000.

Linev, Valery D.: *See*—
Keller, Viktor R.; Linev, Valery D.; Mittsev, Sergei G.; Zhivov, Mikhail Z.; Pelts, Boris B.; Popov, Alexandr N.; Rozenberg, Vladimir L.; Burochkin, Alexandr E.; Romanenkov, Jury A.; and Onischin, Boris P., 4,449,221, Cl. 373-44.000.

Lington, Christopher G.: *See*—
Zaczepinski, Sioma; Billimoria, Rustom M.; Tao, Frank; Lington, Christopher G.; and Plumlee, Karl W., 4,448,665, Cl. 208-8.0LE.

Lippert, Hans-Joachim: *See*—
Karger, Ludwig; and Lippert, Hans-Joachim, 4,448,744, Cl. 376-262.000.

Lippitt, David L.; Espelage, Paul M.; Tupper, Leland C.; Walker, Loren H.; and Weiss, Herbert W., to General Electric Company. Flux feedback firing control for a load commutated inverter. 4,449,087, Cl. 318-723.000.

Liquipak International, Inc.: *See*—
Pankratz, Lawrence A.; and Cornica, Donald G., 4,448,008, Cl. 53-202.000.

Liskov, Nathan A.; Curtis, Robert G.; Favaloro, Caesar J.; and Pence, Geogory L., to Raytheon Company. Eye opening monitor. 4,449,223, Cl. 375-10.000.

Liszka, Edward G.: *See*—
Schmidt, Richard L.; Sullivan, Edmund J.; Myers, Bernard J.; and Liszka, Edward G., 4,449,211, Cl. 367-153.000.

Little, Thomas R.: *See*—
Kleinecke, John D.; and Little, Thomas R., 4,448,450, Cl. 292-210.000.

Litton Business Systems, Inc.: *See*—
Salkeld, Stephen A.; Stock, Mark E.; and Welch, Robert J., 4,448,231, Cl. 160-135.000.

Litton Industrial Products, Inc.: *See*—
Burbury, Robert L., 4,449,228, Cl. 378-151.000.

Litton Systems, Inc.: *See*—
Zuckerman, Leonard; and Taddonio, Colin, 4,449,046, Cl. 250-235.000.

Liu, Kou-Chang; and Brown, Michael J., to GAF Corporation. Selective process for the preparation of hydroxy alkyl phenoxy benzoates. 4,448,982, Cl. 560-21.000.

Liu, William Y. Pastry and dumpling maker. 4,448,576, Cl. 425-89.000.

Livne, Zvi, to Dan Mamtirim. Pop-up sprinkler. 4,448,353, Cl. 239-205.000.

Ljutic, Albert V. Gun with reduced recoil. 4,447,975, Cl. 42-16.000.

Lloyd, John: *See*—
Barby, Donald; Clarke, David E.; Lloyd, John; and Haq, Zia, 4,448,704, Cl. 252-91.000.

Lockheed Corporation: *See*—
Webber, Robert C., 4,448,624, Cl. 156-175.000.

Loeb, Marvin P., to Laserscope, Inc. Method for providing an oxygen bearing liquid to a blood vessel for the performance of a medical procedure. 4,448,188, Cl. 128-6.000.

Loehr, Clifford E.: *See*—
Chun, Duk S.; Stermole, David A.; and Loehr, Clifford E., 4,448,759, Cl. 423-474.000.

Loepfe Brothers Limited: *See*—
Stutz, Hansruedi; and Lapp, Karl, 4,447,955, Cl. 33-129.000.

Loeser, Werner: *See*—
Sarnecki, Wilhelm; Kovacs, Jenoe; Loeser, Werner; Rudolf, Peter; and Vaeth, Guenter, 4,448,761, Cl. 423-632.000.

Loffler, Gerhard: *See*—
Jeschke, Willi; Rambausek, Hugo; Uhrig, Rudolf-Karl; and Loffler, Gerhard, 4,448,533, Cl. 356-416.000.

Lollis, Glen R.; Marler, Marvin G.; Car, Joe P.; and John, Sam J. Apparatus for replacing bolster rings. 4,448,340, Cl. 228-29.000.

Lombardi, Aurelio; and Occhini, Elio, to Societa Cavi Pirelli S.p.A. Optical fiber element with three layer protective covering. 4,448,484, Cl. 350-96.230.

Lombardino, Anthony V.; and Perfetto, Louis P. Chain saw guard. 4,447,953, Cl. 30-382.000.

Long, William D.: *See*—
Ford, Arthur J.; Kuhn, Patrick; and Long, William D., 4,448,259, Cl. 172-462.000.

Long, William J., to United States Gypsum Company. Mineral fiber-containing paper for the production of gypsum wallboard product prepared therewith. 4,448,639, Cl. 162-124.000.

Lord, Henry A.; Bixler, Kenneth D.; and Reifers, Richard F., to Diamond International Corporation. Egg cell construction. 4,448,344, Cl. 229-2.5EC.

Lorenz, Artur: *See*—
Drinkuth, Franz; von Bonin, Wulf; Schapel, Dietmar; and Lorenz, Artur, 4,448,914, Cl. 524-32.000.

Lorenz, Donald H.; and Williams, Earl P., to GAF Corporation. Electron beam sensitive resist. 4,448,876, Cl. 430-296.000.

Loutfy, Rafik O.: *See*—
Badesha, Santokh S.; and Loutfy, Rafik O., 4,448,646, Cl. 204-59.00M.

Lowe, Allen D., to West Company, The. Tamper evident container-closure assembly. 4,448,318, Cl. 215-252.000.

Lowe, Henry E. Cat box filler system and method. 4,448,151, Cl. 119-1.000.

Lubrizol Corporation, The: *See*—
Forsberg, John W., 4,448,703, Cl. 252-75.000.

Lucas, August, to Carl Still GmbH & Co. K.G., Firma. Method for evacuating emissions of a coke oven. 4,448,641, Cl. 201-41.000.

Lucas, August, to Carl Still GmbH & Co. K.G., Firma. Apparatus for evacuating emissions of a coke oven. 4,448,642, Cl. 202-263.000.

Lucas Industries Limited: *See*—
Heppenstall, Keith, 4,449,162, Cl. 361-156.000.
Skinner, Robert T. J., 4,448,165, Cl. 123-179.00L.

Luchaco, David G., to Lutron Electronics Co., Inc. Excess light turn-off circuit. 4,449,074, Cl. 315-159.000.

Lucian, Anton: *See*—
Zwiener, Rudolf; Lucian, Anton; and Gattiker, Ernst, 4,448,220, Cl. 139-1.00E.

Ludke, Hans; Bahr, Albert; Mehrhoff, Friedrich-Wilhelm; and Legner, Karl, to Bergwerkaverband GmbH; and Ruhrkohle AG. Floatation arrangement. 4,448,681, Cl. 210-97.000.

Luijben, Henricus G. J. A. M.; and Meinders, Herman C., to U.S. Philips Corporation. Optically readable information disc comprising an envelope of cross-linked synthetic resin. 4,448,827, Cl. 428-35.000.

Lundberg, Robert D.; and Peiffer, Dennis G., to Exxon Research and Engineering Co. Viscosification of hydrocarbon fluids. 4,448,926, Cl. 524-612.000.

Lunn, Gerald, to Motorola, Inc. Integrator circuit for separating vertical sync pulses. 4,449,146, Cl. 358-154.000.

Luper, Charles R.: *See*—
Jaffe, Michael B.; Luper, Charles R.; Mabry, Eric; and Reid, Howard J., 4,448,058, Cl. 73-23.000.

Lupul, Francis T.: *See*—
Brown, William W., Jr.; Dahlke, Gerhard P.; and Lupul, Francis T., 4,448,149, Cl. 118-500.000.

Lutron Electronics Co., Inc.: *See*—
Luchaco, David G., 4,449,074, Cl. 315-159.000.

Luxtron Corporation: *See*—
Wickersheim, Kenneth A., 4,448,547, Cl. 374-131.000.

Lynch, John F., Jr.: *See*—
Lee, Byung H.; and Lynch, John F., Jr., 4,449,238, Cl. 381-110.000.

Lynch, Matthew J., to ICI Americas Inc. Maltitol containing gel base systems. 4,448,778, Cl. 424-260.000.

Mabry, Eric: *See*—
Jaffe, Michael B.; Luper, Charles R.; Mabry, Eric; and Reid, Howard J., 4,448,058, Cl. 73-23.000.

MacDonald, Ian N.: *See*—
White, William W.; and MacDonald, Ian N., 4,448,552, Cl. 384-404.000.

MacFadden, John A.; Keever, Joseph M.; and Zisa, William J., to Westinghouse Electric Corp. Temperature compensated magnetic damping assembly for induction meters. 4,449,094, Cl. 324-152.000.

Machida, Yoshimasa: *See*—
Negi, Shigeto; Machida, Yoshimasa; Yamauchi, Hiroshi; Saito, Isao; Hasagawa, Yoshikazu; and Kawamura, Tamio, 4,448,775, Cl. 424-246.000.

MacInnis, Martin B.: *See*—
Scheithauer, Richard A.; Miller, Michael J.; MacInnis, Martin B.; Christini, James N.; and Vogt, Martin C., 4,448,755, Cl. 423-56.000.

Mackenzie, John D.; and Horiuchi, Tetsuro, to Atlantic Richfield Company. Hollow spheres produced from natural zeolites. 4,448,599, Cl. 65-21.400.

Madey, John M. J.: *See*—
Smith, Todd I.; Elias, Luis R.; and Madey, John M. J., 4,449,219, Cl. 372-2.000.

Maeda, Fujio, to Kabushiki Kaisha Komatsu Seisakusho. Pressure-responsive control for a power train of the type having a torque converter equipped with a lockup clutch. 4,448,293, Cl. 192-3.300.

Maeda, Hideo: *See*—
Ogawa, Koji; Ohtsuki, Yoshihiko; Kudo, Yoshihiko; Maeda, Hideo; and Kihara, Naoto, 4,448,404, Cl. 269-21.000.

Magerlein, Barney J., to Upjohn Company, The. Nargenicin derivatives. 4,448,970, Cl. 548-336.000.

Magin, Rudolf: *See*—
Dressel, Manfred; Greven, Johannes; Jeck, Arnulf; Magin, Rudolf; Nick, Gunther; Schaffarczyk, Paul; and Weiss, Guenther, 4,448,080, Cl. 73-799.000.

Magnenet, Jean, to Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme). Process and machine for magnetographic printing (I). 4,449,130, Cl. 346-74.700.

Magnenet, Jean, to Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme). Process and machine for magnetographic printing (III). 4,449,131, Cl. 346-74.700.

Magnenet, Jean, to Compagnie Internationale pour l'Informatique Cii-Honeywell Bull. Process and machine for magnetographic printing (II). 4,449,132, Cl. 346-74.700.

Magnenet, Jean G.: *See*—
Binder, Jean-Jacques; and Magnenet, Jean G., 4,449,160, Cl. 360-104.000.

Maida, Osamu: *See*—
Saegusa, Takashi; Maida, Osamu; and Fukuhara, Toru, 4,448,506, Cl. 354-431.000.

Mailand, John J.; and Samuelson, Bruce E., to Minnesota Mining and Manufacturing Company. Adjustable weatherstrip assembly. 4,447,989, Cl. 49-488.000.

Majewski, Klaus-Peter; Morsbach, Martin; and Schulz, Dietrich, to Goetze AG. Cylinder head gasket. 4,448,431, Cl. 277-325.00B.

Maki, Naoki: *See*—
Yamaguchi, Kiyoshi; and Maki, Naoki, 4,448,042, Cl. 62-505.000.

Makimoto, Mitsuo: *See*—
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Malina, Frank. Aerating apparatus utilizing rotating impeller vane. 4,448,685, Cl. 210-219.000.

Malladi, Madhava: *See*—
Gross, Benjamin; Haddad, James H.; and Malladi, Madhava, 4,448,753, Cl. 422-144.000.

Malless, George C., Jr. Gutter cleaning apparatus. 4,447,927, Cl. 15-236.00R.

Malthouse, Martin D.; and Groeger, Heinz K., to Associpak International Inc. Cutter assembly. 4,448,629, Cl. 156-510.000.
Maness, Riley C.: *See*—
Keller, Alex J.; Williams, Joseph R.; Fechner, Erhard A.; Pinto, Akiva; King, James A., Jr.; Crawford, Charles D.; and Maness, Riley C., 4,448,272, Cl. 177-1.000.
Manning, Anne M., heir: *See*—
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Manning, Ernest B., deceased: *See*—
Chenausky, Peter P.; Bullis, Robert H.; Brown, Clyde O.; and Manning, Ernest B., deceased, 4,449,220, Cl. 372-83.000.
Manning, Frank W., to United States of America, Energy. Portable battery-free charger for radiation dosimeters. 4,449,049, Cl. 250-377.000.
Manning, Mark C.: *See*—
Jacobson, Carl C., Jr.; and Manning, Mark C., 4,448,352, Cl. 239-125.000.
Mantel, Juval. Device for reducing static and dynamic pressures in pipelines, particularly of solid-borne sound in tubular conduits. 4,448,538, Cl. 181-227.000.
Manuccia, Thomas J.; Peele, John R.; and Geosling, Christine E., to United States of America, Navy. High temperature ultra-high vacuum infrared window seal. 4,448,000, Cl. 52-208.000.
Manville Service Corporation: *See*—
Ewing, Robert L., 4,449,168, Cl. 362-404.000.
Manz, Albrecht: *See*—
Becker, Wilhelm; and Manz, Albrecht, 4,448,912, Cl. 523-414.000.
Maphis, Sam W., to Genstar Waste Transfer, Inc. Subsurface waste disposal system. 4,448,690, Cl. 210-609.000.
Marancik, William G., to Airco, Inc. Method of fabricating multifilament intermetallic superconductor. 4,447,946, Cl. 29-599.000.
Marcellaro, Irene C. Jumpsuit. 4,447,911, Cl. 2-79.000.
Marchal, Paul H.: *See*—
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Marconi Company Limited, The: *See*—
Young, Arthur P.; Gildersleeves, Clive D. P.; Partridge, Brian W.; and Ryder, Keith L., 4,449,181, Cl. 364-200.000.
Marcy, Dewey R. Self-loading bale disintegrating machine. 4,448,361, Cl. 241-101.700.
Margolin, Mark: *See*—
Basov, Emma; Grois, Igor; Margolin, Mark; and Berg, Alan, 4,448,481, Cl. 350-96.200.
Mark, Victor, to General Electric Company. Process for the preparation of substituted amidines. 4,448,975, Cl. 548-558.000.
Mark, Victor: *See*—
Rosenquist, Niles R.; Mark, Victor; and Hedges, Charles V., 4,448,953, Cl. 528-198.000.
Markovich, Voya: *See*—
Amelio, William J.; Lemon, Gary K.; Markovich, Voya; Panasik, Theodore; Sambucetti, Carlos J.; and Trevitt, Donna J., 4,448,804, Cl. 427-98.000.
Marler, Marvin G.: *See*—
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Marling, John B.; and Heath, Thomas K., to Marling, John Beaton. Telescope guider. 4,448,500, Cl. 350-574.000.
Marling, John Beaton: *See*—
Marling, John B.; and Heath, Thomas K., 4,448,500, Cl. 350-574.000.
Marques, Salvador A., to Andral Corporation. Portable fold-up ladder. 4,448,283, Cl. 182-164.000.
Marsh, Richard A.: *See*—
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Marsh, Richard L.; and Wetzel, Robert E., to Dayco Corporation. Long synchronous belt and method for making the same. 4,448,621, Cl. 156-138.000.
Marsh, Walter H. W.: *See*—
Szostak, Jan; Schaeflern, Henry; and Marsh, Walter H. W., 4,448,141, Cl. 112-315.000.
Marshall, David E.: *See*—
Moorhouse, David; and Marshall, David E., 4,448,386, Cl. 248-564.000.
Marsi, Joseph A., to Borg-Warner Corporation. Mechanical seal assembly. 4,448,428, Cl. 277-92.000.
Martell, Michael D. Vented, aspirating syringe. 4,448,206, Cl. 128-765.000.
Martenson, Irvin W., to American Organics Corp. Resin antistatic and strengthening composition. 4,448,916, Cl. 524-106.000.
Martin, Michel: *See*—
Millette, Germain; and Martin, Michel, 4,448,331, Cl. 222-181.000.
Maruhnic, Peter, to HRI, Inc. Viscosity measurement using pressurized viscometer device. 4,448,060, Cl. 73-57.000.
Maruta, Keiji: *See*—
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Maruzen Pharmaceutical Co., Ltd.: *See*—
Toyoshima, Shigeshi; Fujimura, Hajime; Ito, Shunsuke; and Kondo, Yasuji, 4,448,788, Cl. 424-313.000.
Marvin Glass & Associates: *See*—
Zaruba, John V.; and Disko, Harry, 4,448,421, Cl. 273-243.000.
Mas, Ramon B.: *See*—
Vilaseca, Hilario S.; and Mas, Ramon B., 4,448,329, Cl. 222-96.000.
Masaki, Katsumi: *See*—
Hirayama, Kazuhiro; Sato, Yasushi; Mochizuki, Noritaka; and Masaki, Katsumi, 4,448,513, Cl. 355-8.000.
Maschinenfabrik Dr. Rudolf Schieber GmbH & Co., KG: *See*—
Kuhnert, Gottfried, 4,448,044, Cl. 66-120.000.
Masco Corporation: *See*—
Cronce, Gary M., 4,448,337, Cl. 224-321.000.
Mashaw, Howard R., Jr., to Otis Engineering Corporation. Piston-expanded metallic seal for side door well valve. 4,448,427, Cl. 277-73.000.
Masologites, George P.; Sun, Jui-Yuan; Yoo, Jin S.; and Burk, Emmett H., Jr., to Atlantic Richfield Company. Process for removing sulfur from coal. 4,448,584, Cl. 44-1.05R.
Mason, Roger L.: *See*—
Eckstein, Robert J.; and Mason, Roger L., 4,448,157, Cl. 123-142.50R.
Massachusetts Institute of Technology: *See*—
Yannas, Ioannis V.; and Kirk, James F., 4,448,718, Cl. 260-123.700.
Masu, Masanobu: *See*—
Sugio, Akitoshi; Masu, Masanobu; and Amagai, Akikazu, 4,448,931, Cl. 525-68.000.
Masuda, Keiji, to Konishiroku Photo Industry Co., Ltd. Electrophotographic recording apparatus with corona-discharge device having cover means between end of discharge wire and electrophotosensitive surface. 4,448,511, Cl. 355-3.0CH.
Masuda, Mitsuya: *See*—
Inohara, Shizuo; Masuda, Mitsuya; Iyehara, Sadahiro; Ueda, Minoru; and Yamamoto, Keisuke, 4,449,148, Cl. 358-230.000.
Masui, Kiyoshi: *See*—
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Masurat, Heinz-Werner: *See*—
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Masuzawa, Sigeaki: *See*—
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Matarrese, Francis J., Jr.: *See*—
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Matsubara, Akitoshi: *See*—
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Matsuda, Susumu; and Kawaguchi, Katuhiko, to Tokyo Electric Co., Ltd. Paper guide arrangement for printing apparatus. 4,448,559, Cl. 400-637.400.
Matsudaira, Nagahisa; Yoshida, Kaneki; Fukuyoshi, Kenzo; and Masui, Kiyoshi, to Toppan Printing Co., Ltd. Electrochromic display device. 4,448,493, Cl. 350-357.000.
Matsumoto, Kenzo, to Tokyo Shibaura Denki Kabushiki Kaisha. Digital scan converter. 4,448,201, Cl. 128-660.000.
Matsumoto, Kouichi: *See*—
Tanaka, Kentaro; Kondo, Eiji; Mayama, Mikao; Matsumoto, Kouichi; Kawamura, Yoshimi; and Tsuji, Naoki, 4,448,723, Cl. 260-245.20T.
Matsuo, Giichi, to Nippon Kokan Kabushiki Kaisha. Rotary trough type cooling bed run-in apparatus. 4,448,298, Cl. 198-451.000.
Matsuo, Seitaro: *See*—
Ehara, Kohei; Muramoto, Susumu; Morimoto, Takashi; Matsuo, Seitaro; and Itsumi, Masabu, 4,448,800, Cl. 427-39.000.
Matsuo, Takeshi: *See*—
Kuwabara, Eiji; Sakata, Takayoshi; Kawauchi, Noboru; Ide, Yuuichi; and Matsuo, Takeshi, 4,448,597, Cl. 62-176.600.
Matsuoka, Akira; and Tsukagoshi, Terukazu, to Omron Tateisi Electronics Co. Identification code determining apparatus for use in transaction processing apparatus. 4,449,040, Cl. 235-380.000.
Matsushima, Takeo: *See*—
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Maurer, Edward J., Jr.; Baumann, Hanns U.; and Watkins, Herbert E. Factory built construction assembly. 4,447,996, Cl. 52-79.100.
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McCabe, Stanley G. Laundry spreader, counter, and folder. 4,447,972, Cl. 38-12.000.
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McManus, Acie J. Portable laser vertical collimator and plumb line indicator. 4,448,528, Cl. 356-250.000.
McNeill, Locksley D. Surface projectile and target game. 4,448,418, Cl. 273-123.00A.
McQueen, Coy E.; and Twedt, Lynn O., to Erect-A-Tube, Inc. Bi-fold door assembly. 4,448,232, Cl. 160-207.000.
McRae, Douglas C., to National Research Development Corporation. Soil-separating assemblies. 4,448,257, Cl. 171-127.000.
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Wood, Prentice J., 4,448,452, Cl. 294-87.200.
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Melone, Robert R., to Smith Investment Company. Power operated chair lift mechanism. 4,448,382, Cl. 248-421.000.
Menard, Jean G., to NL Chem Canada, Inc. High speed fluid grinding and disperser mill. 4,448,358, Cl. 241-39.000.
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Cragoe, Edward J., Jr.; Rooney, Clarence S.; and Williams, Haydn W. R., 4,448,786, Cl. 424-274.000.
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Metzger, Romain. Battery securing device. 4,448,469, Cl. 339-82.000.
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Moller, Reinfried, to Expert Maschinenbau GmbH. Stepping drive mechanism. 4,448,093, Cl. 74-821.000.
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Mount, Ramon A.; and Wrobleski, James T., 4,448,978, Cl. 549-259.000.
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Morimoto, Masao; Shimbashi, Ichiro; Iida, Hiroshi; and Sakurai, Koichi, to Nippon Steel Corporation. Process for cooling a cold rolled steel strip. 4,448,614, Cl. 148-12.100.
Morimoto, Takashi: *See*—
Ehara, Kohei; Muramoto, Susumu; Morimoto, Takashi; Matsuo, Seitaro; and Itsumi, Manabu, 4,448,800, Cl. 427-39.000.
Morinaga, Hiroshi: *See*—
Tsubaki, Kazumi; Morinaga, Hiroshi; and Yukawa, Joei, 4,448,948, Cl. 528-95.000.
Morioka, Masakazu: *See*—
Nakamura, Syuichi; and Morioka, Masakazu, 4,449,098, Cl. 324-326.000.
Moritoki, Masato; Fujikawa, Takao; and Miyanaga, Junichi, to Kabushiki Kaisha Kobe Seiko Sho. High density sintering method for powder molded products. 4,448,747, Cl. 419-49.000.
Moritz, George J., to Akzona, Incorporated. Production of purified brine. 4,448,682, Cl. 210-101.000.
Moriya, Makoto: *See*—
Hayashi, Isao; and Moriya, Makoto, 4,448,323, Cl. 220-86.00R.
Moriyama, Masakazu; Saito, Takao; Ido, Akinori; Matsushima, Takeo; and Hara, Hisao, to Toyota Jidosha Kogyo Kabushiki Kaisha. Air conditioner control system. 4,448,035, Cl. 62-176.600.
Mork, Orlan H. Soil leveling apparatus. 4,448,258, Cl. 172-197.000.
Moroney, John J., to Torrington Company, The. Bearing. 4,448,550, Cl. 384-127.000.
Morris, Hal C., to Rohm and Haas Company. Method of sizing hydrophobic yarn. 4,448,839, Cl. 428-267.000.
Morris, William. Container and dispenser for material in granular or powder form. 4,448,334, Cl. 222-230.000.
Morrison, Charles F., Jr., to VAC-TEC Systems, Inc. Method and apparatus for evaporation arc stabilization including initial target cleaning. 4,448,659, Cl. 204-192.00R.
Morrow, Rosemary K., to Putman, Philip A. Crippled hand assisting device. 4,447,912, Cl. 2-159.000.
Morsbach, Martin: *See*—
Majewski, Klaus-Peter; Morsbach, Martin; and Schulz, Dietrich, 4,448,431, Cl. 277-325.00B.
Morse, Royal R., III: *See*—
Andrews, Edward W.; Celek, John E.; Morse, Royal R., III; and Bergholz, Eugene W., 4,449,195, Cl. 364-900.000.
Morse, Stephen P.: *See*—
Pohlman, William, III; Ravenel, Bruce W., III; McKevitt, James F., III; and Morse, Stephen P., 4,449,184, Cl. 364-200.000.
Morton, Anthony J., to Colgate-Palmolive Company. Dentifrice composition. 4,448,766, Cl. 424-52.000.
Morzycki, Jacek W.: *See*—
DeLuca, Hector F.; Schnoes, Heinrich K.; and Morzycki, Jacek W., 4,448,721, Cl. 260-239.500.
Mosely, Neal J.: *See*—
Fulcher, Junius H., 4,447,995, Cl. 52-38.000.
Moss, Gerald, to Exxon Research and Engineering Co. Combined staged air conditioner and heat store. 4,448,030, Cl. 62-79.000.
Moss, Herbert H.: *See*—
Gentry, Larry L.; Moss, Herbert H.; and Panicker, Narayana N., 4,448,568, Cl. 405-169.000.
Motojima, Kenji; and Kawamura, Fumio, to Hitachi, Ltd. Process for producing zeolite adsorbent and process for treating radioactive liquid waste with the zeolite adsorbent. 4,448,711, Cl. 502-74.000.
Motorola, Inc.: *See*—
Adlhoch, Richard H., 4,449,203, Cl. 365-104.000.
Eckert, Kim; Crisp, Richard D.; and Ta, Lam, 4,449,064, Cl. 307-473.000.
Kurby, Christopher N., 4,449,250, Cl. 455-76.000.
Lunn, Gerald, 4,449,146, Cl. 358-154.000.
Rabe, Duane C., 4,449,245, Cl. 455-319.000.
Wilhelm, Randy L., 4,449,194, Cl. 364-725.000.
Mount, Ramon A.; and Wrobleski, James T., to Monsanto Company. Process for preparing maleic anhydride. 4,448,978, Cl. 549-259.000.
Mudge, Ronald K.; and Rice, Edwin E., to Ingersoll-Rand Company. Engine cold testing. 4,448,063, Cl. 73-117.200.
Mudlake Holdings Ltd.: *See*—
Thorsell, Stanley E., 4,448,004, Cl. 52-241.000.
Mueller, Ralph W., to E. R. Wagner Mfg. Co. Caster including on center bearing arrangement. 4,447,932, Cl. 16-21.000.
Mues, Gunther: *See*—
Seibel, Georg; Mues, Gunther; and Horn, Theodor, 4,449,036, Cl. 219-265.000.
Mukai, Junji: *See*—
Koyama, Tohru; Wajima, Motoyo; and Mukai, Junji, 4,448,940, Cl. 525-504.000.
Mukenschnabl, Donald F. Rewinder apparatus. 4,448,363, Cl. 242-67.30R.
Mukoyama, Yoshiyuki: *See*—
Osada, Yuichi; Kasai, Shozo; Okada, Yasunori; Uchigasaki, Isao; Oshima, Toyoji; Mukoyama, Yoshiyuki; and Nishizawa, Hiroshi, 4,448,844, Cl. 428-375.000.
Muller, Jurgen: *See*—
Bauer, Walter; Farber, Heinrich; and Muller, Jurgen, 4,448,508, Cl. 354-281.000.
Muller, Ortwin; Biber, Klaus; Jakubowski, Heinz; and Hanemann, Gerhard, to Carl-Zeiss-Stiftung, Heidenheim/Brenz. Operation microscope. 4,448,498, Cl. 350-516.000.
Muller, Werner C.; and Miller, Franklyn D., to National Distillers and Chemical Corporation. Fermentable sugar from the hydrolysis of starch derived from dry milled cereal grains. 4,448,881, Cl. 435-162.000.
Multi-Arc Vacuum Systems Inc.: *See*—
Bergman, Clark; Vergason, Gary E.; Clark, Robert; and Bosak, Shannon, 4,448,799, Cl. 427-37.000.
Multi Electric Mfg. Inc.: *See*—
Mongoven, Michael A.; Bees, Paul R.; and Earl, David C., 4,449,073, Cl. 315-130.000.
Munzel, Wolf-Dietrich: *See*—
Andres, Rudolf; Grantz, Helmut; Munzel, Wolf-Dietrich; and Odebrecht, Wolfgang, 4,448,241, Cl. 165-104.140.
Andres, Rudolf; Grantz, Helmut; Munzel, Wolf-Dietrich; and Odebrecht, Wolfgand, 4,448,242, Cl. 165-104.140.
Murakami, Shohachi: *See*—
Hori, Takako; Yoshida, Chosaku; Kiba, Yasuo; Takeno, Ryuko; Nakano, Joji; Nitta, Jun; Kishimoto, Sumiko; Murakami, Shohachi; Tsuda, Hisatsugu; and Saikawa, Isamu, 4,448,963, Cl. 544-367.000.
Murakawa, Kazunori: *See*—
Imai, Eiichi; Uchide, Hitoshi; Murakawa, Kazunori; Uchiyama, Masaki; Ochi, Hisayuki; Urawa, Motoo; Takagi, Seiichi; and Mitsuhashi, Yasuo, 4,448,870, Cl. 430-107.000.
Murakoshi, Makoto, to Fuji Photo Film Co., Ltd. Camera shake detection apparatus. 4,448,510, Cl. 354-289.120.
Muramoto, Susumu: *See*—
Ehara, Kohei; Muramoto, Susumu; Morimoto, Takashi; Matsuo, Seitaro; and Itsumi, Manabu, 4,448,800, Cl. 427-39.000.
Muranaga, Yoshinobu, to Casio Computer Co., Ltd. Dot matrix type multi-layer liquid crystal display device. 4,449,123, Cl. 340-716.000.
Murase, Heihachi, to Kansai Paint Company. Anti-icing compositions. 4,448,919, Cl. 524-394.000.
Murata, Hideki: *See*—
Tamaki, Kiyoshi; Murata, Hideki; Terada, Sadatugu; Wada, Tsuneo; Matsubara, Akitoshi; and Takagiwa, Hiroyuki, 4,448,871, Cl. 430-109.000.
Murata Manufacturing Co., Ltd.: *See*—
Kakehi, Sasuga; Nakagawa, Nobuhiko; Adachi, Hideo; and Takaya, Tadashi, 4,449,019, Cl. 179-110.00A.
Murayama, Noboru: *See*—
Ogawa, Mutsuo; and Murayama, Noboru, 4,449,149, Cl. 358-280.000.
Yokota, Takashi; Yamazaki, Shigeru; Kanmoto, Yoshiaki; Kawazu, Motoaki; Murayama, Noboru; and Abe, Daisuke, 4,449,151, Cl. 358-293.000.
Murphy, Reuel A. Method and apparatus for shaft support for turbine pumps. 4,448,551, Cl. 384-252.000.
Murray, Avon R. Security tie-down apparatus. 4,448,049, Cl. 70-58.000.
Murray, James D., to Passavant Corporation. Spraying apparatus for cleaning filter plates. 4,448,221, Cl. 134-76.000.
Muta, Teruaki: *See*—
Hanyu, Takaomi; Irie, Nobuhiko; Hasegawa, Akira; Muta, Teruaki; Sakaguchi, Katsuyoshi; Ikeda, Toshihisa; Itayama, Yoshiharu; and Nakahara, Akira, 4,448,575, Cl. 425-47.000.
Muto, Hiroshi: *See*—
Uno, Chiyomatsu; and Muto, Hiroshi, 4,448,121, Cl. 101-76.000.
Muto, Kenji; Watanabe, Minoru; Hatta, Takao; Sugaya, Toru; Takemoto, Yoshinori; and Nakamizo, Nobuhiro, to Kyowa Hakko Kogyo Co., Ltd. 1,4-Dihydropyridine derivatives. 4,448,964, Cl. 546-194.000.
Muzzarelli, Gabriele. Apparatus for the dry salting of curd for cheese production. 4,448,116, Cl. 99-460.000.
Myer, Jon H., to Hughes Aircraft Company. Fiber optic hydrophone transducers. 4,449,210, Cl. 367-149.000.

Myers, Bernard J.: *See*—
Schmidt, Richard L.; Sullivan, Edmund J.; Myers, Bernard J.; and Liszka, Edward G., 4,449,211, Cl. 367-153.000.
Naarden International N.V.: *See*—
van der Weerdt, Antonius J. A.; and Apeldoorn, Willem, 4,448,712, Cl. 252-522.00R.
Nagai, Hirosi; and Nishimura, Yasushi, to Kureha Kagku Kagyo Kabushiki Kaisha. Hydroxyapatite, ceramic material and process for preparing thereof. 4,448,758, Cl. 423-308.000.
Nagai, Kiyoshi; Shinohara, Hiroshi; and Imamura, Nobuo, to Taiyo Samo Co., Ltd. Method of silver plating stainless steel vacuum bottle surfaces. 4,448,809, Cl. 427-239.000.
Nagai, Yasushi: *See*—
Sato, Akio; Nakajima, Kenji; Takahara, Yoshimasa; Kijima, Shizumasa; Watanabe, Hideaki; Kawamura, Tamio; and Nagai, Yasushi, 4,449,002, Cl. 568-28.000.
Nagano, Hironobu: *See*—
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Nagaoka, Kenji, to Sumitomo Chemical Company, Limited. Process for producing aromatic polyamide-imide. 4,448,957, Cl. 528-351.000.
Nagata, Wataru; and Aoki, Tsutomu, to Shionogi & Co., Ltd. Inversion of the 3α-amino group attached to the β-lactam ring. 4,448,720, Cl. 260-239.00A.
Nagatani, Kazuo, to Sakurai Machine Trading Co., Ltd. Apparatus for discharge of printed sheets from a cylinder type screen printing machine. 4,448,124, Cl. 101-118.000.
Nagele, Karl-Heinz: *See*—
Schuech, Siegmund; Nagele, Karl-Heinz; Jambor, Arno; and Sacco, Bruno, 4,447,928, Cl. 15-250.210.
Nagle, Michael: *See*—
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Nakagawa, Nobuhiko: *See*—
Kakehi, Sauga; Nakagawa, Nobuhiko; Adachi, Hideo; and Takaya, Tadashi, 4,449,019, Cl. 179-110.00A.
Nakagiri, Takashi: *See*—
Ohkubo, Yukitoshi; Osada, Yoshiyuki; Sugata, Masao; and Nakagiri, Takashi, 4,448,867, Cl. 430-31.000.
Nakahara, Akira: *See*—
Hanyu, Takaomi; Irie, Nobuhiko; Hasegawa, Akira; Muta, Teruaki; Sakaguchi, Katsuyoshi; Ikeda, Toshihisa; Itayama, Yoshiharu; and Nakahara, Akira, 4,448,575, Cl. 425-47.000.
Nakaho, Junichi, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Tilting device for use in anti-glare mirror. 4,448,488, Cl. 350-278.000.
Nakajima, Kenji: *See*—
Sato, Akio; Nakajima, Kenji; Takahara, Yoshimasa; Kijima, Shizumasa; Watanabe, Hideaki; Kawamura, Tamio; and Nagai, Yasushi, 4,449,002, Cl. 568-28.000.
Nakajima, Mutsuhiko, to Ace Pak Company Incorporated. Automatic carton packing machine. 4,448,013, Cl. 53-565.000.
Nakajima, Nobuyuki; and Hiruma, Katumi, to Diesel Kiki Co., Ltd. Double-injection type fuel injection valve. 4,448,356, Cl. 239-533.500.
Nakajima, Tomoo, to Tamura Seisakusho Co., Ltd. Transformer. 4,449,111, Cl. 336-206.000.
Nakajima, Toyohei: *See*—
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Nakamizo, Nobuhiro: *See*—
Muto, Kenji; Watanabe, Minoru; Hatta, Takao; Sugaya, Toru; Takemoto, Yoshinori; and Nakamizo, Nobuhiro, 4,448,964, Cl. 546-194.000.
Nakamoto, Akira; and Saito, Katsuhiko, to Shimadzu Corporation. Liquid chromatograph. 4,448,692, Cl. 210-656.000.
Nakamoto, Hiromasa; and Miyoshi, Takeshi, to Toyo Kogyo Co., Ltd. Clustered switch mounting means for use in automotive vehicles. 4,448,276, Cl. 180-90.000.
Nakamura, Akira: *See*—
Kitagawa, Junji; Akita, Shigeyuki; Kasegawa, Norimichi; and Nakamura, Akira, 4,448,275, Cl. 180-79.100.
Nakamura, Hiromi: *See*—
Sayama, Norio; and Nakamura, Hiromi, 4,448,018, Cl. 60-39.050.
Nakamura, Kyoichi: *See*—
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Nakamura, Nobuo: *See*—
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Nakamura, Syuichi; and Morioka, Masakazu, to Osaka Gas Company Limited. Arrangement for detecting the location of an electrically insulative continuous item positioned underground. 4,449,098, Cl. 324-326.000.
Nakano, Joji: *See*—
Hori, Takako; Yoshida, Chosaku; Kiba, Yasuo; Takeno, Ryuko; Nakano, Joji; Nitta, Jun; Kishimoto, Sumiko; Murakami, Shohachi; Tsuda, Hisatsugu; and Saikawa, Isamu, 4,448,963, Cl. 544-367.000.
Nakano, Masahiro: *See*—
Hashimoto, Shintaro; Masuzawa, Sigeaki; Tsuda, Hiroshi; Sibata, Shinya; and Nakano, Masahiro, 4,449,232, Cl. 381-51.000.
Nakayama, Haruhiko; and Tatsuno, Takashi, to Rikagaku Kenkyusho. Herbicidal composition. 4,448,603, Cl. 71-92.000.
Nakayama, Noboru: *See*—
Aoyama, Jun; and Nakayama, Noboru, 4,448,182, Cl. 123-605.000.
Nakayama, Shigeru, to Olympus Optical Company Limited. Toner cleaning apparatus. 4,449,241, Cl. 118-699.000.
Nanba, Satoshi: *See*—
Ishida, Hiroshi; Kitagawa, Takaichi; Sumida, Yasuji; Nanba, Satoshi; and Tomi, Toshikazu, 4,448,519, Cl. 355-73.000.
Napier, Bradley, Jr.: *See*—
Duerksen, Walter K.; Googin, John M.; and Napier, Bradley, Jr., 4,448,701, Cl. 252-49.300.
Nappholz, Tibor A.; Money, David K.; Swift, Stephen; and Bradbury, Ronald C., to Telectronics Pty. Ltd. Heart pacer end-of-life detector. 4,448,197, Cl. 128-419.0PT.
Nappholz, Tibor A.: *See*—
Money, David K.; and Nappholz, Tibor A., 4,448,196, Cl. 128-419.0PT.
Naruo, Kyoichi: *See*—
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Naruto, Masashi, to Mitsubishi Denki Kabushiki Kaisha. Chopper control equipment for electric railcars. 4,449,077, Cl. 318-6.000.
Nation, Thomas C.: *See*—
Johnson, Robert C.; Nation, Thomas C.; and Perry, David L., 4,449,100, Cl. 324-378.000.
National Can Corporation: *See*—
Kraska, John L., 4,448,322, Cl. 220-67.000.
National Distillers and Chemical Corporation: *See*—
Muller, Werner C.; and Miller, Franklyn D., 4,448,881, Cl. 435-162.000.
National Element, Inc.: *See*—
Best, Lorne A., 4,449,016, Cl. 174-138.00J.
National Molding Corporation: *See*—
Anscher, Bernard, 4,447,934, Cl. 24-16.0PB.
National Research Development Corporation: *See*—
Ash, Philip S.; and Hider, Robert C., 4,448,765, Cl. 424-14.000.
Board, Kenneth, 4,449,140, Cl. 357-7.000.
Klinner, Wilfred E., 4,448,014, Cl. 56-13.600.
Lewis, Meirion F., 4,448,805, Cl. 427-100.000.
McRae, Douglas C., 4,448,257, Cl. 171-127.000.
National Starch and Chemical Corporation: *See*—
Iovine, Carmine P.; and Ray-Chaudhuri, Dilip K., 4,448,935, Cl. 525-343.000.
NCR Canada Ltd - NCR Canada Ltee: *See*—
Driemeyer, Reinhold G. F., 4,448,554, Cl. 400-124.000.
NCR Corporation: *See*—
Bashford, Anthony J.; and Vandenham, Elbert H., 4,448,407, Cl. 271-8.00A.
Knapp, George W.; Spaulding, Bernard B.; and Tolbert, John T., 4,449,202, Cl. 364-900.000.
Porter, Warren W., 4,448,466, Cl. 339-17.00M.
Negi, Shigeto; Machida, Yoshimasa; Yamauchi, Hiroshi; Saito, Isao; Hasegawa, Yoshikazu; and Kawamura, Tamio, to Eisai Co., Ltd. 3-Carbamoyloxymethylcephem derivatives, and antibacterial drugs containing same. 4,448,775, Cl. 424-246.000.
Nehmiz, Peter: *See*—
Bohlen, Harald; Greschner, Johann; and Nehmiz, Peter, 4,448,865, Cl. 430-5.000.
Neilsen, Hildaur L. Key retaining device. 4,448,051, Cl. 70-389.000.
Nelsen, Suzanne B.: *See*—
Ozari, Yehuda; Nelsen, Suzanne B.; and Klein, Andrew, 4,448,932, Cl. 525-78.000.
Nepomiastchy, Alexis; and Pireyre, Guy R. F., to Societe Anonyme de Telecommunications. Machine for finishing ferrite magnetic pot cores. 4,447,990, Cl. 51-76.00R.
Neri, Bruce P.; Liffmann, Stanley M.; and Bergkuist, Carolyn, to Instrumentation Laboratory Inc. Fluid analysis. 4,448,889, Cl. 436-74.000.
Neumann, Frank: *See*—
Funk, Hans G.; Neumann, Frank; and Schaefer, Dankmar, 4,448,447, Cl. 285-4.000.
Newport, James B.: *See*—
Greer, Richard H.; and Newport, James B., 4,449,055, Cl. 307-38.000.
Nezu, Yuzo: *See*—
Senoo, Akira; Nezu, Yuzo; Ito, Masanori; Nagano, Hironobu; and Aire, Tatsuo, 4,448,144, Cl. 114-102.000.
NGK Insulators, Ltd.: *See*—
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NHK Spring Co., Ltd.: *See*—
Senaha, Susumu; Kyo, Suizo; Shimomura, Susumu; Akagami, Akira; Imai, Hiroshi; Ohno, Akira; Katayama, Shitomi; and Nomura, Suguru, 4,448,855, Cl. 428-632.000.
Nick, Gunther: *See*—
Dressel, Manfred; Greven, Johannes; Jeck, Arnulf; Magin, Rudolf; Nick, Gunther; Schaffarczyk, Paul; and Weiss, Guenther, 4,448,080, Cl. 73-799.000.
Nied, Herman A., to General Electric Company. Acoustic wave spot welder adaptive control. 4,449,029, Cl. 219-117.100.
Niedzielski, James H.: *See*—
Weaver, Richard A.; Niedzielski, James H.; Herronen, John R.; Wright, Joseph M.; and Prime, Ronald M., 4,448,302, Cl. 198-781.000.
Nihon Tokushu Noyaku Seizo K.K.: *See*—
Saito, Junichi; Shiokawa, Kozo; and Takemoto, Toshiyuki, 4,448,733, Cl. 260-985.000.
Nijhawan, Subash C.: *See*—
von Alpen, Ulrich; and Nijhawan, Subash C., 4,448,860, Cl. 429-57.000.
Niki, Motohiro. Apparatus for rearing small animals. 4,448,152, Cl. 119-22.000.

Ninomiya, Masakazu; and Suzuki, Atsushi, to Nippondenso Co., Ltd. Optimum control for internal combustion engines. 4,448,162, Cl. 123-419.000.
Ninomiya, Masakazu; and Suzuki, Atsushi, to Nippondenso Co., Ltd. Method and apparatus for optimum control of internal combustion engines. 4,448,171, Cl. 123-419.000.
Nippon Aroma Co., Ltd.: *See*—
Yamaya, Eisuke; Yamamoto, Osamu; Koike, Takashi; and Seino, Shunji, 4,448,921, Cl. 524-443.000.
Nippon Kogaku K. K.: *See*—
Hayashi, Kiyoshi, 4,448,495, Cl. 350-428.000.
Ogawa, Koji; Ohtsuki, Yoshihiko; Kudo, Yoshihiko; Maeda, Hideo; and Kihara, Naoto, 4,448,404, Cl. 269-21.000.
Wakamiya, Koichi, 4,448,497, Cl. 350-464.000.
Nippon Kogaku K.K.: *See*—
Saegusa, Takashi; Maida, Osamu; and Fukuhara, Toru, 4,448,506, Cl. 354-431.000.
Nippon Kokan Kabushiki Kaisha: *See*—
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Senoo, Akira; Nezu, Yuzo; Ito, Masanori; Nagano, Hironobu; and Aire, Tatsuo, 4,448,144, Cl. 114-102.000.
Nippon Shokubai Kagaku Kogyo Co. Ltd.: *See*—
Ono, Tetsuji; Tsuchitani, Kazuo; Yamauchi, Shin; and Yonehara, Kiyoshi, 4,448,895, Cl. 502-304.000.
Nippon Soken, Inc.: *See*—
Abe, Seiko; and Watanabe, Kazuhide, 4,448,173, Cl. 123-549.000.
Kitagawa, Junji; Akita, Shigeyuki; Kasegawa, Norimichi; and Nakamura, Akira, 4,448,275, Cl. 180-79.100.
Nippon Steel Corporation: *See*—
Morimoto, Masao; Shimbashi, Ichiro; Iida, Hiroshi; and Sakurai, Koichi, 4,448,614, Cl. 148-12.100.
Nippon Telegraph and Telephone Public Corporation: *See*—
Ehara, Kohei; Muramoto, Susumu; Morimoto, Takashi; Matsuo, Seitaro; and Itsumi, Manabu, 4,448,800, Cl. 427-39.000.
Tsuchiya, Toshiaki; and Itsumi, Manabu, 4,449,142, Cl. 357-23.000.
Nippondenso Co., Ltd.: *See*—
Aoyama, Jun; and Nakayama, Noboru, 4,448,182, Cl. 123-605.000.
Fukazawa, Takeshi; Yamaguchi, Shunzo; and Atsumi, Morihiro, 4,449,039, Cl. 219-553.000.
Ninomiya, Masakazu; and Suzuki, Atsushi, 4,448,162, Cl. 123-419.000.
Ninomiya, Masakazu; and Suzuki, Atsushi, 4,448,171, Cl. 123-419.000.
Tokitsu, Naoki; Itoh, Toshihiko; and Fujiwara, Toshitaka, 4,449,206, Cl. 365-229.000.
Yamaguchi, Shunzo; Takeuchi, Yukihisa; Miura, Yasunao; and Miwa, Naoto, 4,448,833, Cl. 428-116.000.
Nishida, Fumihiko; Yamanaka, Isamu; and Ijiri, Hiroshi, to Dainippon Screen Sei..o Kabushiki Kaisha. Photosensitive material holder for an upright printing machine. 4,448,518, Cl. 355-72.000.
Nishida, Tatehiko: *See*—
Senda, Kenichi; Ando, Masao; Nakamura, Kyoichi; Mori, Kiyoshi; and Nishida, Tatehiko, 4,448,901, Cl. 521-60.000.
Nishigaki, Yuji: *See*—
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Nishikawa, Yukio, to Precision Monolithics, Inc. Low power, process and temperature insensitive FET bias circuit. 4,449,067, Cl. 307-570.000.
Nishimura, Akihiro: *See*—
Chang, Hao-Jan; and Nishimura, Akihiro, 4,448,846, Cl. 428-412.000.
Nishimura, Masaaki: *See*—
Shibata, Takashi; and Nishimura, Masaaki, 4,449,234, Cl. 381-65.000.
Nishimura, Yasushi: *See*—
Nagai, Hirosi; and Nishimura, Yasushi, 4,448,758, Cl. 423-308.000.
Nishimura, Yutaka: *See*—
Ohyama, Yoshishige; Nishimura, Yutaka; Yamauchi, Teruo; Kuroiwa, Hiroshi; Ohsuga, Minoru; and Kirisawa, Tadashi, 4,448,070, Cl. 73-204.000.
Nishino, Atsushi: *See*—
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Nissan Motor Company, Limited: *See*—
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Hayashi, Isao; and Moriya, Makoto, 4,448,323, Cl. 220-86.00R.
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Menard, Jean G., 4,448,358, Cl. 241-39.000.
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Mercier, Jacques H., 4,448,217, Cl. 138-30.000.
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Paros, Jerome M., 4,448,546, Cl. 374-117.000.
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Nugent, Walter J.; and Nugent, Leslie G. Locks. 4,448,050, Cl. 70-223.000.
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Jannard, James H., 4,447,914, Cl. 2-432.000.
Obermaa, Joel R.; and Ott, Russell G., to RCA Corporation. Implementation of instruction for a branch which can cross one page boundary. 4,449,185, Cl. 364-200.000.
Obermeyer, James H., to Unarco Industries, Inc. Storage racks with spacer tabs. 4,448,315, Cl. 211-191.000.
O'Brien, Joseph P.; and Papay, Andrew G., to Edwin Cooper, Inc. Polyalkylene succinimide lubricant additives. 4,448,974, Cl. 548-550.000.
Occhini, Elio: *See*—
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Oda, Kenichi. Process for recovering exhaust heat. 4,448,025, Cl. 60-651.000.
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Off, Joseph W. A.; Early, Judson H.; Roady, Daniel K.; and Thayer, Theodore B., to Haggar Company. Method and apparatus for applying a welt to a garment panel. 4,448,626, Cl. 156-256.000.

Ogasawara, Fumihiro, to Ricoh Company, Ltd. Self-scanning photodiode array. 4,449,147, Cl. 358-212.000.
Ogawa, Koji; Ohtsuki, Yoshihiko; Kudo, Yoshihiko; Maeda, Hideo; and Kihara, Naoto, to Nippon Kogaku K. K. Device for holding a sheet-like sample. 4,448,404, Cl. 269-21.000.
Ogawa, Mutsuo; and Murayama, Noboru, to Ricoh Company, Ltd. Facsimile apparatus. 4,449,149, Cl. 358-280.000.
Ogishi, Masaaki; Hagiwara, Isao; Yoshida, Yukio; and Oono, Kenzo, to Yoshida Kogyo K. K. Apparatus for providing an optimal opening and closing of a door. 4,449,078, Cl. 318-102.000.
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Ohkubo, Yukitoshi; Osada, Yoshiyuki; Sugata, Masao; and Nakagiri, Takashi, to Canon Kabushiki Kaisha. Image forming method and device for same. 4,448,867, Cl. 430-31.000.
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Ohmichi, Hitoshi; Enomoto, Hiromu; Yasuda, Yasushi; Mitono, Yoshiharu; and Imaizumi, Taketo, to Fujitsu Limited. Logic circuit with improved switching. 4,449,063, Cl. 307-456.000.
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Ohsuga, Minoru: *See*—
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Ohzono, Kohei, to Honda Giken Kogyo Kabushiki Kaisha. Locking system for rolling-type tricycle. 4,448,436, Cl. 280-282.000.
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Okubo, Yukitoshi, to Canon Kabushiki Kaisha. Image display apparatus. 4,448,491, Cl. 350-344.000.
Oleck, Stephen M.; and Sherry, Howard S., to Mobil Oil Corporation. Catalyst and process for residua demetalation and desulfurization. 4,448,677, Cl. 208-216.0PP.
Olieslagers, Henri G.; and Melgert, Frederik B., to U.S. Philips Corporation. Method of electrophotographically manufacturing a display screen for a color display tube. 4,448,866, Cl. 430-24.000.
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Olson, Alan J., to B. F. Goodrich Company, The. Use of high-intensity rapidly-pulsating actinic radiation in the chlorination of polyvinyl chloride resin. 4,448,658, Cl. 204-159.180.
Olson, Jerry M.; and Carleton, Karen L., to United States of America, Energy. Process for producing silicon. 4,448,651, Cl. 204-60.000.
Olympus Optical Co., Ltd.: *See*—
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Orszulak, Stanley J., to Easco Corporation. Retaining means for impact drive socket. 4,448,564, Cl. 403-318.000.
Osada, Kimio, to Tokyo Shibaura Denki Kabushiki Kaisha. Compact fluorescent lamp. 4,449,072, Cl. 315-58.000.
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Speegle, Steven C.; Schwendemann, Kenneth L.; Vinzant, Michael B.; Crow, Robert W.; and Mondon, Cary G., 4,448,216, Cl. 137-630.000.
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Ozari, Yehuda; Nelsen, Suzanne B.; and Klein, Andrew, to GAF Corporation. Polyvinyl chloride modified with butadiene-containing core-shell composite polymers for enhanced impact strength. 4,448,932, Cl. 525-78.000.
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Pachonik, Horst, to Siemens Aktiengesellschaft. Device for the cathode sputtering of a metal. 4,448,652, Cl. 204-298.000.
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Parker, Michael S. Multi-use balance beam apparatus. 4,448,411, Cl. 272-111.000.
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Patry, Louison. Wheel balancing device. 4,448,073, Cl. 73-484.000.
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Pauly, Hans-Erwin; Kapmeyer, Wolfgang; and Seitz, Ulrich, to Behringwerke Aktiengesellschaft. Latex, biologically active latex conjugates and a process for their preparation. 4,448,908, Cl. 523-201.000.
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Pettigrew, Ronald. Nail driving and recessing tool. 4,448,339, Cl. 227-147.000.
Peyton, Jackie W. Ground rod driving pole. 4,448,264, Cl. 173-52.000.
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Pfundstein, Dean W. Wire spoke wheel hub assembly. 4,448,456, Cl. 301-58.000.

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Phillips, Albert A. Railroad track stress transfer apparatus. 4,448,350, Cl. 238-231.000.

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Pismannik, Konstantin D.: *See*—
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Pohl, Peter H., to Abbott Laboratories. Inert gas wheel assembly. 4,448,011, Cl. 53-512.000.

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Polak, Paul R.; and Jantzen, Daniel E., to P & W Pumping-Jack Co. Hydraulic pump. 4,448,110, Cl. 91-275.000.

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Popov, Alexandr N.: *See*—
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Porter, Robert E. Recessed top feed for sewing machines. 4,448,140, Cl. 112-311.000.

Porter, Warren W., to NCR Corporation. Low insertion force connector for printed circuit boards. 4,448,466, Cl. 339-17.00M.

Potts, Harold L. Deep water riser system for offshore drilling. 4,448,266, Cl. 175-7.000.

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Price, Robert T. Televison programming information system. 4,449,249, Cl. 455-45.000.

Prime, Ronald M.: *See*—
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Purdy, William C., to Sykes Pumps Limited. Improvements in and relating to winches. 4,448,395, Cl. 254-334.000.

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Ransburg-Gema AG: *See*—
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Reich, Fritz; and Thalmann, Alfred, to George Fischer Ltd. Apparatus for welding a joint between plastic pipes. 4,449,038, Cl. 219-535.000.
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Reichert, Rudolf; and Haftlmeier, Theo, to Bosch-Siemens Hausgerate. Cooling appliance, especially a household refrigerator or the like. 4,448,464, Cl. 312-214.000.
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Reno, Charles W., to RCA Corporation. Multi-beam optical record and playback apparatus. 4,449,212, Cl. 369-44.000.
Reno, Charles W., to RCA Corporation. Apparatus for varying track spacing in multi-track optical record systems. 4,449,215, Cl. 369-111.000.
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Richards, Powell; Srivastava, Suresh C.; and Meinken, George E., to United States of America, Energy. Complex of transferrin with ruthenium for medical applications. 4,448,762, Cl. 424-1.100.
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Richelli, Angelo, heir: *See—*
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Riedel, Erich O., to Alfred Gutmann GmbH and Co., Firma. Sluice apparatus for cleaning the interior of pipes. 4,447,925, Cl. 15-104.06A.
Riesland, Eberhard; and Kruger, Karl-Heinz, to Veb Zentrum fur Forschung und Technologie Mikroelekronik. Position drive. 4,448,403, Cl. 269-21.000.
Rieter Machine Works Ltd.: *See—*
Thalmann, Dieter, 4,448,016, Cl. 57-133.000.
Rikagaku Kenkyusho: *See—*
Nakayama, Haruhiko; and Tatsuno, Takashi, 4,448,603, Cl. 71-92.000.

Riley, Robert S.: *See*—
Kung, Roger I.; Flannagan, Stephen T.; Spitz, Jonathan N.; Pelley, Perry H., III; Riley, Robert S.; and Covert, Douglas J., 4,449,207, Cl. 365-230.000.

Riley, William. System for efficiently exchanging heat with ground water in an aquifer. 4,448,237, Cl. 165-2.000.

Rinner, Bernhard: *See*—
Weber, Ralph; Rollinger, Bernt; Hauk, Rolf; Nagle, Michael; and Rinner, Bernhard, 4,448,402, Cl. 266-183.000.

Ritsema, Irving R.; and Johannesen, Donald D., to Bendix Corporation, The. Rotor for a disc brake assembly. 4,448,291, Cl. 188-218.0XL.

Roady, Daniel K.: *See*—
Off, Joseph W. A.; Early, Judson H.; Roady, Daniel K.; and Thayer, Theodore B., 4,448,626, Cl. 156-256.000.

Robers, Klaas H. J.: *See*—
Kroon, Dirk J.; and Robers, Klaas H. J., 4,449,198, Cl. 364-900.000.

Robert Bosch GmbH: *See*—
Bodig, Bernd; Hohne, Gerd; and Kalkhof, Bernd, 4,448,180, Cl. 123-618.000.
Dobler, Klaus; and Hachtel, Hansjorg, 4,448,084, Cl. 73-862.330.
Engelbrecht, Hans-Christian; Kniss, Helmut; and Wessel, Wolf, 4,448,067, Cl. 73-119.00A.
Schmid, Werner; and Rapp, Karl, 4,448,167, Cl. 123-446.000.
Schmidt, Wolfgang, 4,448,074, Cl. 73-585.000.
Wurth, Hans; and Leinhos, Jurgen, 4,448,055, Cl. 72-354.000.

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Clerc, Jean F.; and Robert, Jacques, 4,449,125, Cl. 340-752.000.

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Thorsell, Stanley E., 4,448,004, Cl. 52-241.000.

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Johnson, Steven L.; McLaren, George; and Robertson, George H., 4,448,607, Cl. 106-19.000.

Robertson, Glenn D., Jr., to United States of America, Air Force. Electroding of multi-layered epitaxial structures. 4,448,645, Cl. 204-15.000.

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Cooke, Claude E., Jr.; and Robinson, Leon H., 4,448,250, Cl. 166-255.000.

Robison, Thomas E. Reaction gill net. 4,447,978, Cl. 43-10.000.

Robotic Vision Systems, Inc.: *See*—
DiMatteo, Paul, 4,448,505, Cl. 353-122.000.

Rocca, David. Driver tool. 4,448,097, Cl. 81-177.00M.

Roccaforte, Harry I.; and Scott, Raymond G., to Champion International Corporation. Container for expandable food pouch. 4,448,309, Cl. 206-525.000.

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Crossett, Joseph A., III; and Hartmann, Paul R., 4,449,222, Cl. 375-10.000.
Feldmann, Daniel P., 4,449,058, Cl. 307-152.000.
Holmstrom, Roy C., 4,448,053, Cl. 72-102.000.
Vail, David K., 4,448,543, Cl. 368-202.000.

Rockwell Rimoldi, S.p.A.: *See*—
Romano, Rancati, 4,448,047, Cl. 66-207.000.

Rodnyansky, Lazar I.; and Gupalov, Viktor K. Implantable correctant of a spinal curvature and a method for treatment of a spinal curvature. 4,448,191, Cl. 128-69.000.

Rodson, Marius; and Scher, Herbert B., to Stauffer Chemical Company. Encapsulation process. 4,448,929, Cl. 525-57.000.

Roe, Jin-Young K.: *See*—
Keeling, Ronald J.; Roe, Jin-Young K.; and Mollmann, Henry C., 4,448,849, Cl. 428-503.000.

Roehrich, Siegfried: *See*—
Viniczay, Gabriella F.; and Roehrich, Siegfried, 4,448,295, Cl. 192-125.00A.

Roes, John B.: *See*—
Kelly, Guy M.; Roes, John B.; Walker, Samuel B.; and Beach, Bruce A., 4,449,186, Cl. 364-407.000.

Roggen, Rolf, to Swiss Aluminium Ltd. Device for measuring the bath temperature in a fused salt electrolytic cell used for the production of aluminum. 4,448,661, Cl. 204-243.00R.

Roggenkamp, Clyde L. Dental supply dispenser. 4,448,307, Cl. 206-369.000.

Rohm GmbH: *See*—
Fink, Herbert; Siol, Werner; Dinklage, Horst; and Rauch, Hubert, 4,448,945, Cl. 526-193.000.

Rohm and Haas Company: *See*—
Morris, Hal C., 4,448,839, Cl. 428-267.000.

Rohr, Wolfgang; Hansen, Hanspeter; Plath, Peter; and Wuerzer, Bruno, to BASF Aktiengesellschaft. Dichloroacetamides, herbicides containing acetanilides as herbicidal active ingredients and the dichloroacetamides as antagonists, and the use of these herbicides in controlling undesired plant growth. 4,448,960, Cl. 544-282.000.

Rojey, Alexandre; and Cheron, Jacques, to Institut Francais du Petrol. Process for cold and/or heat production with use of carbon dioxide and a condensable fluid. 4,448,031, Cl. 62-101.000.

Rollinger, Bernt: *See*—
Weber, Ralph; Rollinger, Bernt; Hauk, Rolf; Nagle, Michael; and Rinner, Bernhard, 4,448,402, Cl. 266-183.000.

Roman, Gianfranco, to Claber S.p.A. Watering pistol. 4,448,355, Cl. 239-526.000.

Roman, Steven A., to Shell Oil Company. Preparation of (1R,cis)-oxyimino-substituted cyclopropanecarboxylic acids. 4,448,986, Cl. 562-506.000.

Romanenkov, Jury A.: *See*—
Keller, Viktor R.; Linev, Valery D.; Mittsev, Sergei G.; Zhivov, Mikhail Z.; Pelts, Boris B.; Popov, Alexandr N.; Rozenberg, Vladimir L.; Burochkin, Alexandr E.; Romanenkov, Jury A.; and Onischin, Boris P., 4,449,221, Cl. 373-44.000.

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Romblom, Edward F.; and Sundeen, Arthur R., to General Motors Corporation. Fuel per pulse indicator for a pulse engine fuel injection system. 4,448,066, Cl. 73-119.00A.

Rombouts, Rombout M., to Allpac Holding B.V. Pulling device. 4,448,233, Cl. 160-319.000.

Rooney, Clarence S.: *See*—
Cragoe, Edward J., Jr.; Rooney, Clarence S.; and Williams, Haydn W. R., 4,448,786, Cl. 424-274.000.

Rose, Donald G. Board game apparatus. 4,448,422, Cl. 273-271.000.

Rose, John A., to O & S Manufacturing Company. Bellows seal for ball and socket joints. 4,448,562, Cl. 403-134.000.

Rosen, Louis M. Convertible couch. 4,447,920, Cl. 5-12.00R.

Rosenquist, Niles R.; Mark, Victor; and Hedges, Charles V., to General Electric Company. Preparation of benzoate ester terminated polycarbonate with aroyl halide. 4,448,953, Cl. 528-198.000.

Ross, Sidney D.: *See*—
Dequasie, Andrew E.; and Ross, Sidney D., 4,449,163, Cl. 361-315.000.

Ross, William J.: *See*—
Clark, Barry P.; Ross, William J.; and Todd, Alec, 4,448,787, Cl. 424-283.000.

Rosselli, Andrew C.: *See*—
Badgley, Patrick R.; and Rosselli, Andrew C., 4,448,169, Cl. 123-467.000.

Rossetti, Ronald: *See*—
Brus, Louis E.; and Rossetti, Ronald, 4,448,524, Cl. 356-36.000.

Rostek, Charles J., Jr.: *See*—
Ramey, Chester E.; and Rostek, Charles J., Jr., 4,448,969, Cl. 548-301.000.

Rothenberger GmbH & Co.: *See*—
Rothenberger, Gunter, 4,447,926, Cl. 15-104.3SN.

Rothenberger, Gunter, to Rothenberger GmbH & Co. Pipe cleaning machine having a container to accommodate cleaning spirals of various diameter. 4,447,926, Cl. 15-104.3SN.

Rotolante, Ralph A.; and Koehler, Toivo, to Carson Alexion Corporation. Focal plane photo-detector mosaic array apparatus. 4,449,044, Cl. 250-211.00J.

Roussel Uclaf: *See*—
Jullien, Renee; and Benayache, Samir, 4,448,728, Cl. 260-464.000.

Roux, Pieter. Dispenser devices for flowable contents in compressible tubes. 4,448,330, Cl. 222-101.000.

Rowlette, John J.: *See*—
Graf, James E.; and Rowlette, John J., 4,448,858, Cl. 429-49.000.

Rozell, William J.: *See*—
Gillich, Thomas N.; Walls, John E.; Wanat, Stanley F.; and Rozell, William J., 4,448,647, Cl. 204-33.000.

Rozenberg, Vladimir L.: *See*—
Keller, Viktor R.; Linev, Valery D.; Mittsev, Sergei G.; Zhivov, Mikhail Z.; Pelts, Boris B.; Popov, Alexandr N.; Rozenberg, Vladimir L.; Burochkin, Alexandr E.; Romanenkov, Jury A.; and Onischin, Boris P., 4,449,221, Cl. 373-44.000.

Rubens, Louis C., to Dow Chemical Company, The. Better foamable styrene and other olefin polymer compositions containing lightly crosslinked hydroxy and isocyanate linkages. 4,448,933, Cl. 525-123.000.

Rubey, Robert J., to Sterling Drug Inc. Check valve for use with high pressure pump. 4,448,212, Cl. 137-238.000.

Rubinson, Barry L.; Gardner, Edward A.; Grace, William A.; Lary, Richard F.; and Keck, Dale R., to Digital Equipment Corporation. Interface between a pair of processors, such as host and peripheral-controlling processors in data processing systems. 4,449,182, Cl. 364-200.000.

Rudolf, Peter: *See*—
Sarnecki, Wilhelm; Kovacs, Jenoe; Loeser, Werner; Rudolf, Peter; and Vaeth, Guenter, 4,448,761, Cl. 423-632.000.

Ruell, Hartwig E.: *See*—
Feix, Wolfgang H.; and Ruell, Hartwig E., 4,449,189, Cl. 364-513.500.

Ruf, Claude: *See*—
Friedrich, Hermann; Ruf, Claude; and Brosy, Jacques, 4,448,208, Cl. 131-297.000.

Ruhrkohle AG: *See*—
Ludke, Hans; Bahr, Albert; Mehrhoff, Friedrich-Wilhelm; and Legner, Karl, 4,448,681, Cl. 210-97.000.

Runtal Holding Company S.A.: *See*—
de Palezieux, Jacques, 4,448,245, Cl. 165-174.000.

Rupert, John P.; and Patton, John T., Jr., to BASF Wyandotte Corporation. Phenolic polyols and rigid cellular compositions derived therefrom. 4,448,951, Cl. 528-129.000.

Rupert, John P.: *See*—
Patton, John T., Jr.; and Rupert, John P., 4,448,952, Cl. 528-129.000.

Russell, Roy R. B.: *See*—
Colman, Geoffrey; and Russell, Roy R. B., 4,448,768, Cl. 424-92.000.

Ruth, Roy L.: *See*—
Paddock, Kimberly A.; and Ruth, Roy L., 4,449,109, Cl. 335-212.000.

Ryan, James W.; and Chung, Alfred, to University of Miami. Tagged pyroglu-L-Phe-L-Arg derivatives, substrates and assays for kallikrein. 4,448,715, Cl. 260-112.50R.

Ryder, Keith L.: *See*—
Young, Arthur P.; Gildersleeves, Clive D. P.; Partridge, Brian W.; and Ryder, Keith L., 4,449,181, Cl. 364-200.000.

Ryley, James F., Jr., to TRW Inc. Optical fiber connectors with automatic supply of index matching fluid and reservoirs for same. 4,448,483, Cl. 350-96.210.

Saam, John C.: *See*—
Falender, James R.; and Saam, John C., 4,448,927, Cl. 524-860.000.

Saba, Costandy S.: *See*—
Kauffman, Robert E.; Rhine, Wendell E.; and Saba, Costandy S., 4,448,887, Cl. 436-60.000.

Sacco, Bruno: *See*—
Schuech, Siegmund; Nagele, Karl-Heinz; Jambor, Arno; and Sacco, Bruno, 4,447,928, Cl. 15-250.210.

Sadoff, Bernard J., Jr.: *See*—
Halling, Horace P.; and Sadoff, Bernard J., Jr., 4,448,449, Cl. 285-263.000.

Saegusa, Takashi; Maida, Osamu; and Fukuhara, Toru, to Nippon Kogaku K.K. Exposure control device of a camera. 4,448,506, Cl. 354-431.000.

Saikawa, Isamu: *See*—
Hori, Takako; Yoshida, Chosaku; Kiba, Yasuo; Takeno, Ryuko; Nakano, Joji; Nitta, Jun; Kishimoto, Sumiko; Murakami, Shohachi; Tsuda, Hisatsugu; and Saikawa, Isamu, 4,448,963, Cl. 544-367.000.

Saito, Isao: *See*—
Negi, Shigeto; Machida, Yoshimasa; Yamauchi, Hiroshi; Saito, Isao; Hasagawa, Yoshikazu; and Kawamura, Tamio, 4,448,775, Cl. 424-246.000.

Saito, Junichi; Shiokawa, Kozo; and Takemoto, Toshiyuki, to Nihon Tokushu Noyaku Seizo K.K. Production of alkylsulfinyl substituted organophosphoric acid esters. 4,448,733, Cl. 260-985.000.

Saito, Katsuhiko: *See*—
Nakamoto, Akira; and Saito, Katsuhiko, 4,448,692, Cl. 210-656.000.

Saito, Syuichiro: *See*—
Katsuma, Makoto; Kamata, Shigeru; Saito, Syuichiro; Kawamura, Masaharu; and Akashi, Akira, 4,448,509, Cl. 354-286.000.

Saito, Takao: *See*—
Moriyama, Masakazu; Saito, Takao; Ido, Akinori; Matsushima, Takeo; and Hara, Hisao, 4,448,035, Cl. 62-176.600.

Sakaguchi, Hirofumi: *See*—
Fujii, Yozo; Sakaguchi, Hirofumi; and Hirabayashi, Tsugio, 4,448,514, Cl. 355-8.000.

Sakaguchi, Katsuyoshi: *See*—
Hanyu, Takaomi; Irie, Nobuhiko; Hasegawa, Akira; Muta, Teruaki; Sakaguchi, Katsuyoshi; Ikeda, Toshihisa; Itayama, Yoshiharu; and Nakahara, Akira, 4,448,575, Cl. 425-47.000.

Sakai, Takamasa: *See*—
Sato, Yasuo; and Sakai, Takamasa, 4,449,141, Cl. 357-14.000.

Sakamoto, Fumio: *See*—
Ikeda, Shoji; Sakamoto, Fumio; Tsukamoto, Goro; and Yamabe, Shigeru, 4,448,769, Cl. 424-114.000.

Sakamoto, Keiji: *See*—
Kozai, Yoshinori; Kobari, Katsuo; and Sakamoto, Keiji, 4,449,177, Cl. 363-126.000.

Sakata, Takayoshi: *See*—
Kuwabara, Eiji; Sakata, Takayoshi; Kawauchi, Noboru; Ide, Yuuichi; and Matsuo, Takeshi, 4,448,597, Cl. 62-176.600.

Sakurai, Kenjiro: *See*—
Shimada, Junichi; Mitsuhashi, Yoshinobu; Sakurai, Kenjiro; Morikawa, Takitaro; and Mitsuzuka, Shuichi, 4,449,204, Cl. 365-127.000.

Sakurai, Koichi: *See*—
Morimoto, Masao; Shimbashi, Ichiro; Iida, Hiroshi; and Sakurai, Koichi, 4,448,614, Cl. 148-12.100.

Sakurai Machine Trading Co., Ltd.: *See*—
Nagatani, Kazuo, 4,448,124, Cl. 101-118.000.

Salkeld, Stephen A.; Stock, Mark E.; and Welch, Robert J., to Litton Business Systems, Inc. Panel system edge sealing means. 4,448,231, Cl. 160-135.000.

Sambucetti, Carlos J.: *See*—
Amelio, William J.; Lemon, Gary K.; Markovich, Voya; Panasik, Theodore; Sambucetti, Carlos J.; and Trevitt, Donna J., 4,448,804, Cl. 427-98.000.

Samifi Babcock Samifi Internationale S.A.: *See*—
LaMonica, Gaspare; Richelli, Federico, deceased; Richelli, Angelo, heir; Richelli, Giorgio, heir; Richelli, Fabrizia, heir; Richelli, Mauro, heir; and Orini, Matilde, heir, 4,448,598, Cl. 62-352.000.

Sampson, Michael J.; and Hutchings, Neville. Process for obtaining improved yields from plants. 4,447,984, Cl. 47-58.000.

Samuelson, Bruce E.: *See*—
Mailand, John J.; and Samuelson, Bruce E., 4,447,989, Cl. 49-488.000.

Sanchez, Jose A., to Westinghouse Electric Corp. System and method for tracking targets in a multipath environment. 4,449,127, Cl. 343-7.00A.

Sanderson, John R., to Mobay Chemical Corporation. Process for the production of bis(4-hydroxyphenyl)biphenyl disulfone. 4,449,003, Cl. 568-33.000.

Sandoz, Inc.: *See*—
Kathawala, Faizulla G.; and Heider, John G., 4,448,785, Cl. 424-274.000.

Sankyo Company, Limited: *See*—
Terahara, Akira; and Tanaka, Minoru, 4,448,979, Cl. 549-292.000.

Sannes, Keith N.: *See*—
Factor, Arnold; and Sannes, Keith N., 4,448,727, Cl. 260-463.000.

Sano, Kenji: *See*—
Kondo, Syun-ichi; Sano, Kenji; and Sato, Hideo, 4,448,869, Cl. 430-83.000.

Sanofi: *See*—
Blanchard, Jean F.; and Lasserre, Pierre P., 4,448,779, Cl. 424-263.000.

Santrade Ltd.: *See*—
Persson, Erik A., 4,448,271, Cl. 175-364.000.

Sargom Company Limited, The: *See*—
Glass, Cyril; Hursey, Leslie G.; and Inness-Turnbull, Ronald, 4,448,841, Cl. 428-270.000.

Sarkki, Marja-Leena; Soderstrom, Martti; Maunula, Hannu; and Korhonen, Annika, to Oy Vehna AB. Process for fractioning grain flour into components of food quality. 4,448,790, Cl. 426-52.000.

Sarnecki, Wilhelm; Kovacs, Jenoe; Loeser, Werner; Rudolf, Peter; and Vaeth, Guenter, to BASF Aktiengesellschaft. Preparation of acicular, ferrimagnetic iron oxides. 4,448,761, Cl. 423-632.000.

Sasaki, Kan: *See*—
Ikemoto, Kazuhito; Katayama, Nobuaki; Terakura, Yukio; and Sasaki, Kan, 4,448,089, Cl. 74-467.000.

Sasaki, Osamu: *See*—
Suzuki, Shinichi; Sawada, Kiyoshi; Kinoshita, Akira; Sasaki, Osamu; and Goto, Satoshi, 4,448,868, Cl. 430-58.000.

SASIB S.p.A.: *See*—
Cavazza, Roberto, 4,447,957, Cl. 33-172.00F.

Sato, Akio; Nakajima, Kenji; Takahara, Yoshimasa; Kijima, Shizumasa; Watanabe, Hideaki; Kawamura, Tamio; and Nagai, Yasushi, to Eisai Co., Ltd.; and General Director of the Agency of Industrial Science and Technology. Polyprenyl sulfones. 4,449,002, Cl. 568-28.000.

Sato, Hideo: *See*—
Kondo, Syun-ichi; Sano, Kenji; and Sato, Hideo, 4,448,869, Cl. 430-83.000.

Sato, Kazuo; Ohmori, Motoji; Takasumi, Masakazu; Shiga, Motohiro; Shiohata, Koki; and Fujisawa, Fumio, to Hitachi, Ltd. Vibration diagnosis method for rotary machine. 4,448,077, Cl. 73-660.000.

Sato, Yasuo; and Sakai, Takamasa, to Clarion Co., Ltd. Variable capacitor. 4,449,141, Cl. 357-14.000.

Sato, Yasushi: *See*—
Hirayama, Kazuhiro; Sato, Yasushi; Mochizuki, Noritaka; and Masaki, Katsumi, 4,448,513, Cl. 355-8.000.

Sato, Yukihiro; and Shibuya, Yoshimichi, to Hitachi, Ltd. Wide angle liquid crystal display that copes with interference coloring. 4,448,489, Cl. 350-330.000.

Satoh, Kazuo; and Nosaka, Tsutomu, to Sumitomo Rubber Industries, Ltd. Apparatus for applying a rubber sheet onto a tire making drum. 4,448,627, Cl. 156-405.100.

Satoh, Seiichi, to Tokyo Shibaura Denki Kabushiki Kaisha. High frequency and steam heating method and apparatus. 4,449,026, Cl. 219-10.55B.

Saurer Diederichs (Societe Anonyme): *See*—
Deborde, Albert H.; and Remond, Pierre L., 4,448,223, Cl. 139-435.000.

Sawada, Kiyoshi: *See*—
Suzuki, Shinichi; Sawada, Kiyoshi; Kinoshita, Akira; Sasaki, Osamu; and Goto, Satoshi, 4,448,868, Cl. 430-58.000.

Sawanishi, Shigeru; Shiomi, Yozo; and Yamane, Akira, to Japan Exlan Company Limited. Process for producing acrylic fibers with excellent surface smoothness. 4,448,740, Cl. 264-182.000.

Sayama, Norio; and Nakamura, Hiromi, to Mitsubishi Gas Chemical Company, Inc. Method for adding water to a heat exchanging system. 4,448,018, Cl. 60-39.050.

Schad, Robert D., to Husky Injection Molding Systems Ltd. Method of molding plastic workpieces about slender permanent inserts. 4,448,741, Cl. 264-251.000.

Schaefer, Dankmar: *See*—
Funk, Hans G.; Neumann, Frank; and Schaefer, Dankmar, 4,448,447, Cl. 285-4.000.

Schaeflern, Henry: *See*—
Szostak, Jan; Schaeflern, Henry; and Marsh, Walter H. W., 4,448,141, Cl. 112-315.000.

Schafer, Robert J., to Ashland Oil, Inc. Process for casting lightweight metals. 4,448,907, Cl. 523-139.000.

Schafer, Werner: *See*—
Berthold, Joachim; Diedrich, Bernd; Franke, Rainer; Hartlapp, Jurgen; Schafer, Werner; and Strobel, Wolfgang, 4,448,944, Cl. 526-119.000.

Schaffarczyk, Paul: *See*—
Dressel, Manfred; Greven, Johannes; Jeck, Arnulf; Magin, Rudolf; Nick, Gunther; Schaffarczyk, Paul; and Weiss, Guenther, 4,448,080, Cl. 73-799.000.

Schapel, Dietmar: *See*—
Drinkuth, Franz; von Bonin, Wulf; Schapel, Dietmar; and Lorenz, Artur, 4,448,914, Cl. 524-32.000.

Scharf, Walter: *See*—
Landgraf, Wolfgang; Scharf, Walter; and Simon, Heinrich, 4,447,991, Cl. 51-161.000.

Scharting, Gunter: *See*—
Moller, Rainer; and Scharting, Gunter, 4,448,108, Cl. 89-37.00R.

Scheithauer, Richard A.; Miller, Michael J.; MacInnis, Martin B.; Christini, James N.; and Vogt, Martin C., to GTE Products Corporation. Method for removal of tin from ammonium tungstates. 4,448,755, Cl. 423-56.000.

Scher, Herbert B.: *See*—
Rodson, Marius; and Scher, Herbert B., 4,448,929, Cl. 525-57.000.

Schering Corporation: *See*—
Afonso, Adriano, 4,448,782, Cl. 424-270.000.
Schierjott, Gunter. Circuit for measuring electrical properties. 4,449,093, Cl. 324-57.00R.
Schindler, Peter; and Huber, Gerhard, to Hoechst AG. Detection of β-lactamase utilizing a chromophoric cephalosporin composition. 4,448,880, Cl. 435-18.000.
Schirmer, Henry G., to W. R. Grace & Co., Cryovac Division. Pasteurizable and cook-in shrink bag constructed of a multilayer film. 4,448,792, Cl. 426-113.000.
Schmid, Alfred: *See*—
Gatzschmann, Horst; Bertels, Herbert; Hafner, Hubertus; and Schmid, Alfred, 4,448,836, Cl. 428-164.000.
Schmid, August, to Patentverwertungs-und Finanzierungsgesellschaft SERANIA AG. Bowling pin sweeper moving apparatus. 4,448,415, Cl. 273-54.00A.
Schmid, Walter. Electrode for detecting bioelectrical signals. 4,448,199, Cl. 128-639.000.
Schmid, Werner; and Rapp, Karl, to Robert Bosch GmbH. Fuel injection pump for internal combustion engines. 4,448,167, Cl. 123-446.000.
Schmidt, Daniel. Tool to supply, twist and cut ends of a metal wire or plastic filament to provide a fastener. 4,448,225, Cl. 140-119.000.
Schmidt, Richard L.; Sullivan, Edmund J.; Myers, Bernard J.; and Liszka, Edward G., to United States of America, Navy. Low drag body conformal acoustic array. 4,449,211, Cl. 367-153.000.
Schmidt, Wolfgang, to Robert Bosch GmbH. Soft-switching audiometer. 4,448,074, Cl. 73-585.000.
Schmitt, Albert, deceased; by Schmitt, Magdalena S., heir; by Schmitt, Thomas, heir; by Schmitt, Martin, heir; by Schmitt, Georg, heir; by Schmitt, Annette, heir; and Spreitzhofer, Ernst. Spectrophotometer. 4,448,530, Cl. 356-320.000.
Schmitt, Annette, heir: *See*—
Schmitt, Albert, deceased; Schmitt, Magdalena S., heir; Schmitt, Thomas, heir; Schmitt, Martin, heir; Schmitt, Georg, heir; Schmitt, Annette, heir; and Spreitzhofer, Ernst, 4,448,530, Cl. 356-320.000.
Schmitt, Georg, heir: *See*—
Schmitt, Albert, deceased; Schmitt, Magdalena S., heir; Schmitt, Thomas, heir; Schmitt, Martin, heir; Schmitt, Georg, heir; Schmitt, Annette, heir; and Spreitzhofer, Ernst, 4,448,530, Cl. 356-320.000.
Schmitt, Magdalena S., heir: *See*—
Schmitt, Albert, deceased; Schmitt, Magdalena S., heir; Schmitt, Thomas, heir; Schmitt, Martin, heir; Schmitt, Georg, heir; Schmitt, Annette, heir; and Spreitzhofer, Ernst, 4,448,530, Cl. 356-320.000.
Schmitt, Martin, heir: *See*—
Schmitt, Albert, deceased; Schmitt, Magdalena S., heir; Schmitt, Thomas, heir; Schmitt, Martin, heir; Schmitt, Georg, heir; Schmitt, Annette, heir; and Spreitzhofer, Ernst, 4,448,530, Cl. 356-320.000.
Schmitt, Thomas, heir: *See*—
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Landgraf, Wolfgang; Scharf, Walter; and Simon, Heinrich, 4,447,991, Cl. 51-161.000.
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Tokarzewski, Richard J.; and Schreiber, William L., 4,449,009, Cl. 568-377.000.
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Schumacher, Hans; Albrecht, Konrad; and Heinrich, Rudolf, to Hoechst Aktiengesellschaft. Herbicidal compositions. 4,448,602, Cl. 71-90.000.
Schuman, Eldor N. Vertical food holder. 4,448,312, Cl. 211-49.00R.
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Speegle, Steven C.; Schwendemann, Kenneth L.; Vinzant, Michael B.; Crow, Robert W.; and Mondon, Cary G., 4,448,216, Cl. 137-630.000.
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Scinta, James, to Phillips Petroleum Company. Hydrocarbon recovery from diatomite. 4,448,669, Cl. 208-11.0LE.
Scott, Charles F. Device for indirectly monitoring cumulative cost of utility consumption. 4,449,187, Cl. 364-464.000.
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Roccaforte, Harry J.; and Scott, Raymond G., 4,448,309, Cl. 206-525.000.
Scott, Wayne A. Adjustable automobile seat bracket. 4,448,454, Cl. 297-313.000.
Scrivens, Carol L.: *See*—
Pomeroy, Glenn A.; and Scrivens, Carol L., 4,448,313, Cl. 211-71.000.
Sea Energy Associates Ltd.: *See*—
Wood, Eric; and Bellamy, Norman W., 4,448,020, Cl. 60-398.000.
Sea Tank Co.: *See*—
Berthin, Jean-Claude, 4,448,570, Cl. 405-204.000.
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Seeley, Frederic F., to F. F. Seeley Nominees Pty. Ltd. Water valve. 4,448,213, Cl. 137-451.000.
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Seikosha Co., Ltd.: *See*—
Yonezawa, Setsuo; and Ikeda, Kazuaki, 4,448,553, Cl. 400-121.000.
Seiler, Norman C.; Nixon, Thomas J.; and Waschka, George A., Jr., to Harris Corporation. Orderwire communication system. 4,449,246, Cl. 455-9.000.
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Seitz, Ulrich: *See*—
Pauly, Hans-Erwin; Kapmeyer, Wolfgang; and Seitz, Ulrich, 4,448,908, Cl. 523-201.000.
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Hashimoto, Shingo; and Sekine, Mitsuo, 4,448,549, Cl. 374-170.000.
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Golinelli, Guido; and Selleri, Narciso, 4,447,960, Cl. 33-178.00E.
Selzer, Robert H.: *See*—
Brooks, Samuel H.; Crawford, Donald W.; Selzer, Robert H.; and Blankenhorn, David H., 4,448,200, Cl. 128-653.000.
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Senaha, Susumu; Kyo, Suizo; Shimomura, Susumu; Akagami, Akira; Imai, Hiroshi; Ohno, Akira; Katayama, Shitomi; and Nomura, Suguru, to Kiko Co., Ltd.; and NHK Spring Co., Ltd. Heat resistant reflector. 4,448,855, Cl. 428-632.000.
Senda, Kenichi; Ando, Masao; Nakamura, Kyoichi; Mori, Kiyoshi; and Nishida, Tatehiko, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Expanded particles of polyolefin resin and process for producing same. 4,448,901, Cl. 521-60.000.

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Serlin, Irving, to Monsanto Company. Preparation of an electrographic recording material. 4,448,807, Cl. 427-121.000.

Serni Limited: *See*—
Wozniak, Jan C., 4,448,349, Cl. 238-62.000.

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Lee, Shih-Ying, 4,448,085, Cl. 73-862.640.

Shaffer, Donald U.; and Oulrey, Gary M. Rotary blowout preventer. 4,448,255, Cl. 166-387.000.

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Sharon, Andre, to International Business Machines Corporation. Telescoping thermal conduction element for cooling semiconductor devices. 4,448,240, Cl. 165-80.00C.

Sharp, Joseph F., to Ceiling Dynamics, Inc. Lighting fixture and air flow support system. 4,449,166, Cl. 362-149.000.

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Hashimoto, Shintaro; Masuzawa, Sigeaki; Tsuda, Hiroshi; Sibata, Shinya; and Nakano, Masahiro, 4,449,232, Cl. 381-51.000.
Ohnishi, Souichi; and Komai, Kensaku, 4,449,154, Cl. 360-51.000.
Washizuka, Isamu; Ikemoto, Yutaka; and Tsuda, Hiroshi, 4,448,542, Cl. 368-63.000.

Shell Oil Company: *See*—
Bell, James P.; and De Nicola, Anthony J., Jr., 4,448,847, Cl. 428-413.000.
Richardson, Edwin A., 4,448,751, Cl. 422-68.000.
Roman, Steven A., 4,448,986, Cl. 562-506.000.
Slaugh, Lynn H., 4,448,993, Cl. 564-402.000.
Southwick, Jeffrey G.; and Morgenthaler, Lee N., 4,448,253, Cl. 166-300.000.

Shen, Jian C.: *See*—
Gragg, Frederick M.; Shen, Jian C.; and Jacobson, Carl L., 4,448,249, Cl. 166-251.000.

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Oleck, Stephen M.; and Sherry, Howard S., 4,448,677, Cl. 208-216.0PP.

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Flores, Robert J., 4,448,446, Cl. 346-224.000.

Sherwood, Philip W.: *See*—
Barsa, Edward A.; and Sherwood, Philip W., 4,448,816, Cl. 427-388.200.

Shete, Prakash K.: *See*—
Golba, Joseph C., Jr.; and Shete, Prakash K., 4,448,909, Cl. 523-303.000.

Shibamata, Yoshiyuki; Onodera, Hideo; and Kiriseko, Tadashi, to Fujitsu Limited. Method and apparatus for heating semiconductor wafers. 4,449,037, Cl. 219-388.000.

Shibano, Kenji, to Fuji Jukogyo Kabushiki Kaisha. Carburetor. 4,448,734, Cl. 261-26.000.

Shibata, Takashi; and Nishimura, Masaaki, to Sony Corporation. Reverberation apparatus. 4,449,234, Cl. 381-65.000.

Shibazaki, Shigeru, to Pioneer Electronic Corporation. Power supply control system of an installation including several devices having electric circuits. 4,449,056, Cl. 307-38.000.

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Shibuya, Yoshimichi: *See*—
Sato, Yukihiro; and Shibuya, Yoshimichi, 4,448,489, Cl. 350-330.000.

Shiga, Motohiro: *See*—
Sato, Kazuo; Ohmori, Motoji; Takasumi, Masakazu; Shiga, Motohiro; Shiohata, Koki; and Fujisawa, Fumio, 4,448,077, Cl. 73-660.000.

Shih, Stuart S.: *See*—
Angevine, Philip J.; Carroll, Michael B.; Shih, Stuart S.; and Tabak, Samuel A., 4,448,672, Cl. 208-86.000.

Shihabi, David S., to Mobil Oil Corporation. Aging resistance shape selective catalyst with enhanced activity. 4,448,673, Cl. 208-111.000.

Shimada, Junichi; Mitsuhashi, Yoshinobu; Sakurai, Kenjiro; Morikawa, Takitaro; and Mitsuzuka, Shuichi, to Agency of Industrial Science and Technology; and Ministry of International Trade and Industry. Information processing apparatus using a semiconductor laser diode. 4,449,204, Cl. 365-127.000.

Shimada, Yukio; Iijima, Tetsuya; and Tanino, Mikio, to Nissan Motor Company, Limited. Air-conditioning system for an automotive vehicle. 4,448,034, Cl. 62-161.000.

Shimadzu Corporation: *See*—
Nakamoto, Akira; and Saito, Katsuhiko, 4,448,692, Cl. 210-656.000.

Shimbashi, Ichiro: *See*—
Morimoto, Masao; Shimbashi, Ichiro; Iida, Hiroshi; and Sakurai, Koichi, 4,448,614, Cl. 148-12.100.

Shimizu, Chiyuki; and Nakamura, Nobuo, to General Electric Company. Method of forming film. 4,448,814, Cl. 427-387.000.

Shimizu, Sachio, to Aiko Engineering Co. Ltd. Extra-high pressure water pump. 4,448,574, Cl. 417-488.000.

Shimomura, Susumu: *See*—
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Shinkle, Kurt D., to United States of America, Air Force. Mounting arrangement for an inertial measurement unit. 4,448,377, Cl. 248-178.000.

Shinohara, Hiroshi: *See*—
Nagai, Kiyoshi; Shinohara, Hiroshi; and Imamura, Nobuo, 4,448,809, Cl. 427-239.000.

Shintani, Kenji: *See*—
Noborimoto, Kazutaka; Maruta, Keiji; Suzuki, Junichi; and Shintani, Kenji, 4,449,213, Cl. 369-45.000.

Shiohata, Koki: *See*—
Sato, Kazuo; Ohmori, Motoji; Takasumi, Masakazu; Shiga, Motohiro; Shiohata, Koki; and Fujisawa, Fumio, 4,448,077, Cl. 73-660.000.

Shiokawa, Kozo: *See*—
Saito, Junichi; Shiokawa, Kozo; and Takemoto, Toshiyuki, 4,448,733, Cl. 260-985.000.

Shiomi, Yozo: *See*—
Sawanishi, Shigeru; Shiomi, Yozo; and Yamane, Akira, 4,448,740, Cl. 264-182.000.

Shionogi & Co., Ltd.: *See*—
Nagata, Wataru; and Aoki, Tsutomu, 4,448,720, Cl. 260-239.00A.
Tanaka, Kentaro; Kondo, Eiji; Mayama, Mikao; Matsumoto, Kouichi; Kawamura, Yoshimi; and Tsuji, Naoki, 4,448,723, Cl. 260-245.20T.

Shiota, Kazuo, to Fuji Photo Film Co., Ltd. Color film printing control method. 4,448,521, Cl. 355-77.000.

Shioyama, Tod K.: *See*—
Kukes, Semyon G.; and Shioyama, Tod K., 4,448,892, Cl. 502-164.000.

Shipp, Kenneth O., Jr.: *See*—
Horn, Gary R.; and Shipp, Kenneth O., Jr., 4,448,557, Cl. 400-279.000.

Shirahata, Ryuji: *See*—
Yamada, Yasuyuki; Shirahata, Ryuji; Yanai, Akio; and Kitamoto, Tatsuji, 4,448,843, Cl. 428-336.000.

Shiratsuchi, Masami; Ishihama, Hiroshi; and Uchida, Yasumi, to Kowa Company, Ltd. N-Nitroxyalkylene benzamide derivatives. 4,448,989, Cl. 564-165.000.

Shuman, Robert T., to Eli Lilly and Company. Pharmacologically active peptides. 4,448,717, Cl. 260-112.50E.

Shuskus, Alexander J., to United Technologies Corporation. Passivation of III-V semiconductor surfaces by plasma nitridation. 4,448,633, Cl. 156-610.000.

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Hashimoto, Shintaro; Masuzawa, Sigeaki; Tsuda, Hiroshi; Sibata, Shinya; and Nakano, Masahiro, 4,449,232, Cl. 381-51.000.

Siegel, Marvin I., to Burroughs Wellcome Co. Substituted pyrazoline, and its use in treatment of gastro-intestinal disturbances. 4,448,783, Cl. 424-273.00P.

Siegrist, Ronald R.: *See*—
Anspaugh, Dennis J.; and Siegrist, Ronald R., 4,448,381, Cl. 248-394.000.

Siemens Aktiengesellschaft: *See*—
Kodal, Tassilo; and Kraus, Hubert, 4,448,265, Cl. 174-52.0PE.
Pachonik, Horst, 4,448,652, Cl. 204-298.000.
Strehl, Herbert, 4,449,218, Cl. 370-69.100.
Witte, Hans-Hermann, 4,448,480, Cl. 350-96.150.

Siemens-Allis, Inc.: *See*—
Kleinecke, John D.; and Little, Thomas R., 4,448,450, Cl. 292-210.000.

Siemens Corporation: *See*—
Feix, Wolfgang H.; and Ruell, Hartwig E., 4,449,189, Cl. 364-513.500.

Simcox, P. David: *See*—
Gestaut, Lawrence J.; and Simcox, P. David, 4,448,886, Cl. 435-262.000.

Simon, Heinrich: *See*—
Landgraf, Wolfgang; Scharf, Walter; and Simon, Heinrich, 4,447,991, Cl. 51-161.000.

Simon, Joachim W., to Nixdorf Computer AG. PCM Communication system and method of operation. 4,449,217, Cl. 370-62.000.

Singer Company, The: *See*—
Glenn, William K., III; Jones, John E.; Laing, Gordon E.; and Sumerau, William R., 4,447,930, Cl. 15-322.000.
Szostak, Jan; Schaeflern, Henry; and Marsh, Walter H. W., 4,448,141, Cl. 112-315.000.

Singer, Loren A., Jr., to Porta Systems Corp. Telephone central office gas tube replacement protector. 4,449,156, Cl. 361-119.000.

Singleton, Lewis, Jr.; and Whitney, James M. Heat exchange system and process for heating and cooling using geothermal energy. 4,448,238, Cl. 165-45.000.

Sinnadurai, F. Nihal; Cook, Anthony J.; and Gurnett, Keith W., to British Telecommunications. Integrated circuit chip carrier. 4,448,306, Cl. 206-331.000.

Siol, Werner: *See*—
Fink, Herbert; Siol, Werner; Dinklage, Horst; and Rauch, Hubert, 4,448,945, Cl. 526-193.000.

Sipp, Bernard: *See*—
Grellet, Bernard; Emmanuel, Jean-Pierre; and Sipp, Bernard, 4,448,611, Cl. 148-6.110.

Sitzmann, Michael E.; and Gilligan, William H., to United States of America, Navy. 1:1:2 And 1:3 mixed polynitroethyl orthocarbonates via mixed trialkoxymethyl trichloromethyl disulfides. 4,449,000, Cl. 568-22.000.

Sivaramakrishnan, Parameswar: *See*—
Baron, Arthur L.; and Sivaramakrishnan, Parameswar, 4,448,950, Cl. 528-128.000.

Skalko, Edward S., to Raymond Engineering Inc. Control for tape drive system. 4,448,368, Cl. 242-186.000.

Skelly, Michael. Multiple flow control valve. 4,448,215, Cl. 137-625.460.

SKF Industrial Trading and Development Co., B.V.: *See*—
Lankamp, Herman, 4,448,700, Cl. 252-12.400.

SKF Kugellagerfabriken GmbH: *See*—
Brandenstein, Manfred; Walter, Lothar; Olschewski, Armin; Huber, Wolfgang; and Friedrich, Wolfgang, 4,448,294, Cl. 192-30.00V.

Skinner, David P.: *See*—
Zehner, William J.; and Skinner, David P., 4,449,209, Cl. 367-102.000.

Skinner, Doyle P., Jr., to Xerox Corporation. Composite ink jet drivers. 4,449,134, Cl. 346-75.000.

Skinner, Robert T. J., to Lucas Industries Limited. Fuel injection pumping apparatus. 4,448,165, Cl. 123-179.00L.

Slaugh, Lynn H., to Shell Oil Company. Process for conversion of hydroxybenzenes to amines. 4,448,993, Cl. 564-402.000.

Sleezer, Paul D.; and Smith, Richard R., to Bristol-Myers Company. Purification of ceforanide. 4,448,958, Cl. 544-20.000.

Sliney, James G., Jr., to United States of America, Air Force. Flexible, resilient anti-contamination baffle. 4,449,242, Cl. 383-103.000.

Smetana, Karel; Busch, Harris; Busch, Rose K.; Gyorkey, Ferenc; Gyorkey, Phyllis; and Davis, Frances M., to Baylor College of Medicine. Detection of human cancer cells with antibodies to human cancer nucleolar antigens. 4,448,890, Cl. 436-508.000.

Smith, Alfred H., Jr.: *See*—
Klein, Steven H.; and Smith, Alfred H., Jr., 4,448,928, Cl. 524-864.000.

Smith, Connie M.: *See*—
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Smith, Enoch P., to Allen-Bradley Company. Light isolated pilot light. 4,449,076, Cl. 315-312.000.

Smith, George E. K. Device for increasing the efficiency of cooking on gas stoves. 4,448,186, Cl. 126-215.000.

Smith Investment Company: *See*—
Melone, Robert R., 4,448,382, Cl. 248-421.000.

Smith, James S.: *See*—
Rhodes, Russell H.; Smith, James S.; and Clare, Leslie P., 4,448,606, Cl. 75-236.000.

Smith, John S.: *See*—
Darvial, Bruce L.; Heintz, Phillip L.; Smith, John S.; and Walth, Lee A., 4,448,175, Cl. 123-557.000.

Smith, Nicholas K.: *See*—
Burke, Edmund T.; Catalano, Joseph F.; Henderson, James A., Jr.; and Smith, Nicholas K., 4,449,017, Cl. 179-27.00D.

Smith, Paul K.; and Klenk, Dennis C., to Pierce Chemical Company. Direct-acting iodinating reagent. 4,448,764, Cl. 424-1.100.

Smith, Randel P., to Steiner Corporation. Towel dispenser. 4,448,462, Cl. 312-38.000.

Smith, Richard R.: *See*—
Sleezer, Paul D.; and Smith, Richard R., 4,448,958, Cl. 544-20.000.

Smith, Todd I.; Elias, Luis R.; and Madey, John M. J. Free electron laser. 4,449,219, Cl. 372-2.000.

SmithKline Beckman Corporation: *See*—
Pfeiffer, Francis R., 4,448,972, Cl. 548-528.000.

Sochol, Irving: *See*—
Welsh, Jay Y.; DeCraene, Denis F.; and Sochol, Irving, 4,448,760, Cl. 423-605.000.

Societa Cavi Pirelli S.p.A.: *See*—
Lombardi, Aurelio; and Occhini, Elio, 4,448,484, Cl. 350-96.230.

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Carre, Jean-Jacques; and Thioux, Alain, 4,448,090, Cl. 74-501.50R.
Delaunay, Jean, 4,448,288, Cl. 188-73.450.
Pressaco, Pierre, 4,448,457, Cl. 303-22.00R.

Societe Anonyme de Telecommunications: *See*—
Nepomiastchy, Alexis; and Pireyre, Guy R. F., 4,447,990, Cl. 51-76.00R.

Societe Anonyme des Etablissements Adrien de Backer: *See*—
Toussaint, Etienne G., 4,448,444, Cl. 361-331.000.

Societe Anonyme dite: Air Industrie: *See*—
Brault, Bernard; and Marchal, Paul H., 4,448,640, Cl. 162-218.000.

Societe Anonyme dite: GIPELEC: *See*—
Broussely, Michel, 4,448,864, Cl. 429-194.000.

Societe d'Assistance Technique pour Produits Nestle S.A.: *See*—
Akesson, Yngve R., 4,448,793, Cl. 426-241.000.
Wieser, Franz; and Hofinger, Hans-Peter, 4,448,796, Cl. 427-4.000.
Wisgott, Ulrich; and Berberat, Alexis, 4,448,794, Cl. 426-267.000.

Soderberg, Ramon. Ventilator. 4,448,112, Cl. 98-62.000.

Soderstrom, Martti: *See*—
Sarkki, Marja-Leena; Soderstrom, Martti; Maunula, Hannu; and Korhonen, Annika, 4,448,790, Cl. 426-52.000.

Sodick Co., Ltd.: *See*—
Fujikawa, Misao, 4,449,027, Cl. 219-69.00E.

Sofranko, John A.; and Leonard, John J., to Atlantic Richfield Company. Oxidation of isobutyric acid to alpha-hydroxyisobutyric acid. 4,448,985, Cl. 562-579.000.

Sogah, Dotsevi Y., to Du Pont de Nemours, E. I., and Company. Preparation of trialkylsilyl ethers. 4,448,980, Cl. 556-446.000.

Solomon, Jack: *See*—
Francis, Arthur W., Jr.; Nowotarski, Mark S.; and Solomon, Jack, 4,448,616, Cl. 148-16.000.

Solomon, Thomas S., to B. F. Goodrich Company, The. Preparation of cord for bonding to rubber. 4,448,813, Cl. 427-381.000.

Sone, Masazumi: *See*—
Ishikawa, Yasuki; Endo, Hiroshi; Sone, Masazumi; and Imai, Iwao, 4,448,181, Cl. 123-620.000.

Sony Corporation: *See*—
Noborimoto, Kazutaka; Maruta, Keiji; Suzuki, Junichi; and Shintani, Kenji, 4,449,213, Cl. 369-45.000.
Shibata, Takashi; and Nishimura, Masaaki, 4,449,234, Cl. 381-65.000.
Yasuda, Nobuyuki; and Odaka, Kentaro, 4,449,061, Cl. 307-268.000.
Yokoya, Satoshi, 4,449,230, Cl. 381-15.000.

Sosa, Jesus M. Jalousie with integral alarm circuit. 4,449,121, Cl. 340-550.000.

Southern California Gas Company: *See*—
Pelka, David G.; and Fleishman, Roc V., 4,448,545, Cl. 374-41.000.

Southwick, Jeffrey G.; and Morgenthaler, Lee N., to Shell Oil Company. Moderated borohydride-induced reservoir dewatering. 4,448,253, Cl. 166-300.000.

Southwire Company: *See*—
Verma, Deepak K., 4,448,052, Cl. 72-57.000.

Southworth, John V. D., Jr., to Trans Refrigeration International, Inc. Vacuum insulated walls for refrigerated containers and trailers. 4,448,041, Cl. 62-268.000.

Spademan, Richard G. Multidirectional dynamic fitting system for sport shoe. 4,447,968, Cl. 36-109.000.

Spangenberg, Stanley F.; Finley, Arlington L.; and Searson, D. James, to Dow Chemical Company, The. Process and anode for molten salt electrolysis. 4,448,654, Cl. 204-70.000.

Sparwell, Norbert: *See*—
Kolitsch, Jorg; Sparwell, Norbert; and Brockmann, Eugen, 4,448,081, Cl. 73-861.030.

Spaulding, Bernard B.: *See*—
Knapp, George W.; Spaulding, Bernard B.; and Tolbert, John T., 4,449,202, Cl. 364-900.000.

Speegle, Steven C.; Schwendemann, Kenneth L.; Vinzant, Michael B.; Crow, Robert W.; and Mondon, Cary G., to Otis Engineering Corporation. Subsurface safety valve. 4,448,216, Cl. 137-630.000.

Speer, Spencer J., to General Dynamics, Pomona Division. Packaging kit for pyrotechnic materials loading. 4,448,130, Cl. 102-498.000.

Sperry Corporation: *See*—
Aplenc, Andrej M. R., 4,448,022, Cl. 60-641.400.

Spiegelberg, Ulf, to C. Hoegger & Cie. AG. Gut casing holding nozzle for a sausage filling machine. 4,447,933, Cl. 17-41.000.

Spiers, Walter A. Water air filter. 4,448,593, Cl. 55-227.000.

Spillers, Frank W.: *See*—
Dang, Hiep D.; Beaver, Richard N.; Spillers, Frank W.; and Hazelrigg, Mark J., Jr., 4,448,663, Cl. 204-270.000.

Spitler, Keith G.: *See*—
Liang, Tai-Ming; and Spitler, Keith G., 4,448,903, Cl. 521-137.000.

Spitz, Jonathan N.: *See*—
Kung, Roger I.; Flannagan, Stephen T.; Spitz, Jonathan N.; Pelley, Perry H., III; Riley, Robert S.; and Covert, Douglas J., 4,449,207, Cl. 365-230.000.

Sporlan Valve Company: *See*—
Barbier, William J., 4,448,038, Cl. 62-212.000.

Spotzl, Markus: *See*—
Kotai, Ferenc; Spotzl, Markus; Drosen, Erich; and Pongratz, Leo, 4,448,107, Cl. 89-36.00K.

Sprague Electric Company: *See*—
Dequasie, Andrew E.; and Ross, Sidney D., 4,449,163, Cl. 361-315.000.

Sprecker, Mark A.; Hanna, Marie R.; Tokarzewski, Richard J.; Belko, Robert P.; Watkins, Hugh; and Vock, Manfred H., to International Flavors & Fragrances Inc. Mono-oxomethyl substituted polyhydrodimethanonaphthalene derivatives. 4,448,984, Cl. 560-256.000.

Sprecker, Mark A.: *See*—
Hall, John B.; and Sprecker, Mark A., 4,449,007, Cl. 568-343.000.

Spreitzhofer, Ernst: *See*—
Schmitt, Albert, deceased; Schmitt, Magdalena S., heir; Schmitt, Thomas, heir; Schmitt, Martin, heir; Schmitt, Georg, heir; Schmitt, Annette, heir; and Spreitzhofer, Ernst, 4,448,530, Cl. 356-320.000.

Srivastava, Suresh C.: *See*—
Richards, Powell; Srivastava, Suresh C.; and Meinken, George E., 4,448,762, Cl. 424-1.100.

Stahn, Roland: *See*—
Fabricius, Hans-Ake; and Stahn, Roland, 4,448,879, Cl. 435-2.000.

Standard Abrasives, Inc.: *See*—
Wray, Daniel J.; and Regnier, Alexis G., 4,448,590, Cl. 51-297.000.

Standard-Knapp, Inc.: *See*—
Raudat, John L., 4,448,009, Cl. 53-248.000.

Standard Oil Company, The: *See*—
Bremer, Noel J.; Dria, Dennis E.; and Weber, Andrew M., 4,448,893, Cl. 502-209.000.
Trushenski, Scott P., 4,448,698, Cl. 252-8.55D.

Standard Oil Company (Indiana): *See*—
Emery, Donald B.; and Herring, William M., 4,448,736, Cl. 264-50.100.
Hanson, Robert B., 4,448,925, Cl. 524-600.000.
Lillwitz, Lawrence D., 4,448,987, Cl. 562-473.000.
Stanton, Austin N. Hearing aid. 4,449,018, Cl. 179-107.0FD.
Stark, Jean R. Jewelry chain loop element and method of assembly. 4,448,017, Cl. 59-80.000.
Stauffer Chemical Company: *See*—
Rodson, Marius; and Scher, Herbert B., 4,448,929, Cl. 525-57.000.
Stawitcke, Frederick A.; Mordan, William J.; Jimison, Holly B.; Piziali, Robert; and Ream, Allen K., to Hewlett Packard Company. Medical ventilator device parametrically controlled for patient ventilation. 4,448,192, Cl. 128-204.260.
Steiner Corporation: *See*—
Smith, Randel P., 4,448,462, Cl. 312-38.000.
Steingroever, Dietrich: *See*—
Steingroever, Erich; and Steingroever, Dietrich, 4,449,095, Cl. 324-223.000.
Steingroever, Erich; and Steingroever, Dietrich. Process and apparatus for recording hysteresis curves of magnetic materials. 4,449,095, Cl. 324-223.000.
Steklenski, David J.: *See*—
Upson, Donald A.; and Steklenski, David J., 4,448,850, Cl. 428-510.000.
Stencel Aero Engineering Corporation: *See*—
Duncan, James W., 4,448,374, Cl. 244-150.000.
Stenkvist, Bjorn G. Device for taking samples of cells from the cervix uteri. 4,448,205, Cl. 128-749.000.
Stepp, Elvin D.; and Claypoole, Gary L., to Cincinnati Electronics Corporation. Audio feedback suppressor. 4,449,237, Cl. 381-93.000.
Sterling Drug Inc.: *See*—
Lesher, George Y., 4,448,780, Cl. 424-263.000.
Rubey, Robert J., 4,448,212, Cl. 137-238.000.
Stermole, David A.: *See*—
Chun, Duk S.; Stermole, David A.; and Loehr, Clifford E., 4,448,759, Cl. 423-474.000.
Sternheim, Eliezer: *See*—
Wilks, Robert S.; Sternheim, Eliezer; Breakey, Gerald A.; Sturges, Robert H., Jr.; Taleff, Alexander; and Castner, Raymond P., 4,448,680, Cl. 209-564.000.
Stewart, Patrick H.: *See*—
Kelley, Brian D.; and Stewart, Patrick H., 4,448,234, Cl. 164-16.000.
Stillie, Donald G.: *See*—
Hilhorst, Jacques J.; and Stillie, Donald G., 4,449,023, Cl. 200-159.00B.
Stine, Laurence O., to UOP Inc. In situ conversion of hydrocarbonaceous oil. 4,448,251, Cl. 166-263.000.
Stock, Mark E.: *See*—
Salkeld, Stephen A.; Stock, Mark E.; and Welch, Robert J., 4,448,231, Cl. 160-135.000.
Stocker, Wendy A.: *See*—
Henry, James L.; and Stocker, Wendy A., 4,449,197, Cl. 364-784.000.
Stoddard, Xerxes T.; Vaseen, Vesper A.; and Terry, Ruel C., to In Situ Technology, Inc. Minimizing subsidence effects during production of coal in situ. 4,448,252, Cl. 166-263.000.
Stohlquist, Roger H.; Brown, Jonathan G.; and Baker, Kenneth V., to Anderson Bros. Mfg. Co. Method and apparatus for making bag-type packages. 4,448,010, Cl. 53-450.000.
Stone, Wayne B., Jr., to Wood Mfg. Co., Inc. Apparatus for increasing the self parking capacity of a parking lot. 4,447,999, Cl. 52-175.000.
Stott, Rexeene S. Segmental mandrel for making wound filament structures. 4,448,628, Cl. 156-425.000.
Stracener, Steve W., to KB Denver, Inc. Backlighted illuminated keyboard. 4,449,024, Cl. 200-317.000.
Strehl, Herbert, to Siemens Aktiengesellschaft. Analog/digital telecommunication subscriber station. 4,449,218, Cl. 370-69.100.
Strobel, Wolfgang: *See*—
Berthold, Joachim; Diedrich, Bernd; Franke, Rainer; Hartlapp, Jurgen; Schafer, Werner; and Strobel, Wolfgang, 4,448,944, Cl. 526-119.000.
Strong, William A. Concrete mixer device. 4,448,536, Cl. 366-66.000.
Stulken, Leon. Device for heating absorbent surfaces within an enclosed space with solar thermal radiation. 4,448,187, Cl. 126-417.000.
Sturges, Robert H., Jr.: *See*—
Wilks, Robert S.; Sternheim, Eliezer; Breakey, Gerald A.; Sturges, Robert H., Jr.; Taleff, Alexander; and Castner, Raymond P., 4,448,680, Cl. 209-564.000.
Stutz, Hansruedi; and Lapp, Karl, to Loepfe Brothers Limited. Method for determining the length of filamentary materials, such as yarn, wound upon a cross-wound package by means of a friction drive and a grooved drum. 4,447,955, Cl. 33-129.000.
Stutz, Herbert; Illers, Karl H.; Haberkorn, Herbert; and Heckmann, Walter, to BASF Aktiengesellschaft. Process for the preparation of noncellular polyurethane elastomers based on 4,4-diisocyanato-1,2-diphenylethane. 4,448,946, Cl. 528-67.000.
Sugata, Masao: *See*—
Ohkubo, Yukitoshi; Osada, Yoshiyuki; Sugata, Masao; and Nakagiri, Takashi, 4,448,867, Cl. 430-31.000.
Sugata, Masashi: *See*—
Hiraishi, Masanori; and Sugata, Masashi, 4,448,637, Cl. 156-635.000.
Sugaya, Toru: *See*—
Muto, Kenji; Watanabe, Minoru; Hatta, Takao; Sugaya, Toru; Takemoto, Yoshinori; and Nakamizo, Nobuhiro, 4,448,964, Cl. 546-194.000.
Sugimori, Teruhiko; Suzuki, Fumio; and Habara, Hideaki, to Mitsubishi Rayon Co., Ltd. Screw-type hydro-extracting extruder. 4,448,537, Cl. 366-75.000.
Sugio, Akitoshi; Masu, Masanobu; and Amagai, Akikazu, to Mitsubishi Gas Chemical Company, Inc. Polyphenylene ether resin. 4,448,931, Cl. 525-68.000.
Sugitani, Junichi; Yoshimoto, Teruo; and Takahashi, Makoto, to Kubota Ltd. Heat resistant cast iron-nickel-chromium alloy. 4,448,749, Cl. 420-584.000.
Sugiyama, Hiroyuki: *See*—
Kawaguchi, Shoichi; and Sugiyama, Hiroyuki, 4,448,125, Cl. 101-185.000.
Sullivan, Edmund J.: *See*—
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Sulzer Brothers Limited: *See*—
Burgbacher, Herbert, 4,448,285, Cl. 184-55.00A.
Weber, Bernhard G., 4,447,915, Cl. 3-1.900.
Sumar Corporation: *See*—
Bryant, Bernard J., 4,448,767, Cl. 424-85.000.
Sumerau, William R.: *See*—
Glenn, William K., III; Jones, John E.; Laing, Gordon E.; and Sumerau, William R., 4,447,930, Cl. 15-322.000.
Sumida, Yasuji: *See*—
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Sumitomo Chemical Company, Limited: *See*—
Nagaoka, Kenji, 4,448,957, Cl. 528-351.000.
Terada, Yutaka; Takahashi, Yukoh; Yachigo, Shinichi; and Ishii, Tamaki, 4,448,915, Cl. 524-93.000.
Sumitomo Metal Industries, Ltd.: *See*—
Kubo, Toshihiko; Ichidate, Minoru; Tamura, Eijiro; Karasuno, Isamu; and Umino, Masahide, 4,448,746, Cl. 419-31.000.
Sumitomo Rubber Industries, Ltd.: *See*—
Satoh, Kazuo; and Nosaka, Tsutomu, 4,448,627, Cl. 156-405.100.
Sun Chemical Corporation: *See*—
Johnson, Steven L.; McLaren, George; and Robertson, George H., 4,448,607, Cl. 106-19.000.
Sun, Hsiang-Ning, to Altantic Richfield Company. Method for producing a vanadium-titanium-tin catalyst exhibiting improved intrinsic surface area. 4,448,898, Cl. 502-350.000.
Sun, Jui-Yuan: *See*—
Masologites, George P.; Sun, Jui-Yuan; Yoo, Jin S.; and Burk, Emmett H., Jr., 4,448,584, Cl. 44-1.0SR.
Sundeen, Arthur R.: *See*—
Romblom, Edward F.; and Sundeen, Arthur R., 4,448,066, Cl. 73-119.00A.
Sundstrand Corporation: *See*—
Hawkins, Royal R., 4,448,021, Cl. 60-449.000.
Sunoco Energy Development Co., a wholly-owned subsidiary of Sun Company, Inc.: *See*—
Monroe, John N., 4,449,047, Cl. 250-253.000.
Sunouchi, Akio; Suzuki, Ryuji; Ichiyanagi, Toshikazu; and Fujino, Masahisa, to Minigrip, Inc. Camera. 4,448,507, Cl. 354-173.000.
Sup, Kim Y., to King Stone Co., Ltd. Golf bag including stiffening structure. 4,448,305, Cl. 206-315.800.
Sutherland, Alexander L.; and Swenson, Richard C., to United States of America, Navy. Shallow water environmental/oceanographic measurement system. 4,448,068, Cl. 73-170.00A.
Sutton, David A.: *See*—
Meier, Markus; and Sutton, David A., 4,449,155, Cl. 360-104.000.
Suverison, Lyle B.: *See*—
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Suzue, Seigo: *See*—
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Ninomiya, Masakazu; and Suzuki, Atsushi, 4,448,171, Cl. 123-419.000.
Suzuki, Fumio: *See*—
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Ishida, Tokuzi; and Yamamoto, Wataru, 4,448,158, Cl. 123-179.00G.
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Suzuki, Junichi: *See*—
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Suzuki, Makoto: *See*—
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Suzuki, Masatoshi, to Omron Tateisi Electronics Co. Apparatus for detecting moving body. 4,449,144, Cl. 358-105.000.
Suzuki, Ryuji: *See*—
Sunouchi, Akio; Suzuki, Ryuji; Ichiyanagi, Toshikazu; and Fujino, Masahisa, 4,448,507, Cl. 354-173.000.

Suzuki, Shinichi; Sawada, Kiyoshi; Kinoshita, Akira; Sasaki, Osamu; and Goto, Satoshi, to Konishiroku Photo Industry Co., Ltd. Electrophotographic photoreceptor with hydrazone derivative. 4,448,868, Cl. 430-58.000.

Svenska Traforskningsinstitutet: *See*—
Hartog, Stefan; and Hollmark, Holger, 4,448,818, Cl. 427-424.000.

Svin'in, Michail P.: *See*—
Burov, Vadim K.; Vanjuskin, Boris M.; Voskoboev, Anatolij E.; Kon'kov, Nikolaj G.; Orechov, Vsevolod D.; Pismannik, Konstantin D.; Svin'in, Michail P.; Fedotov, Michail I.; Damerau, Werner; Dulling, Achim; Heger, Adolf; Reichardt, Gerd; and Wilde, Gotthard, 4,448,048, Cl. 68-5.00E.

Swenson, Richard C.: *See*—
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Swift, Stephen: *See*—
Nappholz, Tibor A.; Money, David K.; Swift, Stephen; and Bradbury, Ronald C., 4,448,197, Cl. 128-419.0PT.

Swigert, Charles J., to United States of America, Air Force. Electronic cancelling of acoustic traveling waves. 4,449,235, Cl. 381-71.000.

Swiss Aluminium Ltd.: *See*—
Roggen, Rolf, 4,448,661, Cl. 204-243.00R.

Sykes Pumps Limited: *See*—
Purdy, William C., 4,448,395, Cl. 254-334.000.

Synergistics Chemicals Ltd.: *See*—
Crocker, Zenas, 4,448,738, Cl. 264-54.000.

Szostak, Jan; Schaeffern, Henry; and Marsh, Walter H. W., to Singer Company, The. Sewing machine cam controlled feed engaging and disengaging mechanism. 4,448,141, Cl. 112-315.000.

Ta, Lam: *See*—
Eckert, Kim; Crisp, Richard D.; and Ta, Lam, 4,449,064, Cl. 307-473.000.

Tabak, Samuel A.: *See*—
Angevine, Philip J.; Carroll, Michael B.; Shih, Stuart S.; and Tabak, Samuel A., 4,448,672, Cl. 208-86.000.

Tabler, Charles P., to Buckhorn Material Handling Group Inc. Live guide system for gravity conveyors. 4,448,296, Cl. 193-35.00C.

Tachibana, Kunitaka: *See*—
Takematsu, Tetsuo; Konnai, Makoto; Tachibana, Kunitaka; Tsuruoka, Takashi; Inouye, Shigeharu; and Watanabe, Tetsuro, 4,448,601, Cl. 71-86.000.

Taddonio, Colin: *See*—
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Taira, Shigenobu, to Fujitsu Limited. Input protection circuit for MIS transistor. 4,449,158, Cl. 361-91.000.

Taiyo Sanso Co., Ltd.: *See*—
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Takagi, Seiichi: *See*—
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Takagishi, Haruyoshi: *See*—
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Takagiwa, Hiroyuki: *See*—
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Takahara, Yoshimasa: *See*—
Sato, Akio; Nakajima, Kenji; Takahara, Yoshimasa; Kijima, Shizumasa; Watanabe, Hideaki; Kawamura, Tamio; and Nagai, Yasushi, 4,449,002, Cl. 568-28.000.

Takahashi, Makoto: *See*—
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Takahashi, Masami: *See*—
Shibuya, Yoshimichi; and Takahashi, Masami, 4,448,490, Cl. 350-335.000.

Takahashi, Seizi; and Aoki, Hachiro, to Diesel Kiki Co., Ltd. Distributor type fuel injection pump adaptable to internal combustion engines with a wide range of the number of cylinders. 4,448,174, Cl. 123-502.000.

Takahashi, Yukoh: *See*—
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Takasumi, Masakazu: *See*—
Sato, Kazuo; Ohmori, Motoji; Takasumi, Masakazu; Shiga, Motohiro; Shiohata, Koki; and Fujisawa, Fumio, 4,448,077, Cl. 73-660.000.

Takaya, Tadashi: *See*—
Kakehi, Sasuga; Nakagawa, Nobuhiko; Adachi, Hideo; and Takaya, Tadashi, 4,449,019, Cl. 179-110.00A.

Takeda Chemical Industries, Ltd.: *See*—
Miyake, Jun-ichi; Yamazaki, Kyuya; and Kamatani, Yoshio, 4,448,947, Cl. 528-73.000.

Takekawa, Hiroshi: *See*—
Basno, Taiichi; Fujimori, Ryo; Takekawa, Hiroshi; and Hijikata, Kazuo, 4,448,752, Cl. 422-81.000.

Takematsu, Tetsuo; Konnai, Makoto; Tachibana, Kunitaka; Tsuruoka, Takashi; Inouye, Shigeharu; and Watanabe, Tetsuro, to Meiji Seika Kaisha, Ltd. Herbicidal compositions and herbicidal processes. 4,448,601, Cl. 71-86.000.

Takemoto, Toshiyuki: *See*—
Saito, Junichi; Shiokawa, Kozo; and Takemoto, Toshiyuki, 4,448,733, Cl. 260-985.000.

Takemoto, Yoshinori: *See*—
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Takemura, Yasuhiko; and Akutsu, Fumihiko, to Tokyo Shibaura Denki Kabushiki Kaisha. Ultrasonic scanning apparatus. 4,448,075, Cl. 73-626.000.

Takeno, Ryuko: *See*—
Hori, Takako; Yoshida, Chosaku; Kiba, Yasuo; Takeno, Ryuko; Nakano, Joji; Nitta, Jun; Kishimoto, Sumiko; Murakami, Shohachi; Tsuda, Hisatsugu; and Saikawa, Isamu, 4,448,963, Cl. 544-367.000.

Takeuchi, Koji: *See*—
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Takeuchi, Masahiko: *See*—
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Takeuchi, Yukihisa: *See*—
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Takita, Naka: *See*—
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Tamaki, Kiyoshi; Murata, Hideki; Terada, Sadatugu; Wada, Tsuneo; Matsubara, Akitoshi; and Takagiwa, Hiroyuki, to Konishiroku Photo Industry Co., Ltd. Toner for developing an electrostatically charged image and manufacturing method thereof. 4,448,871, Cl. 430-109.000.

Tamama, Tetsuo: *See*—
Watanabe, Masaru; Yamauchi, Nobuharu; Hashimoto, Naoki; and Tamama, Tetsuo, 4,449,192, Cl. 364-559.000.

Tammisalo, Erkki. Method to be used in panoramic X-ray photography and an apparatus for carrying out the method. 4,449,225, Cl. 378-39.000.

Tamura, Eijiro: *See*—
Kubo, Toshihiko; Ichidate, Minoru; Tamura, Eijiro; Karasuno, Isamu; and Umino, Masahide, 4,448,746, Cl. 419-31.000.

Tamura Seisakusho Co., Ltd.: *See*—
Nakajima, Tomoo, 4,449,111, Cl. 336-206.000.

Tanabe, Yoshiyuki: *See*—
Kashiwaya, Mineo; Yamada, Kinsaku; Tanabe, Yoshiyuki; Oyama, Yoshishige; Kuroiwa, Hiroshi; and Tsuruta, Hisato, 4,448,172, Cl. 123-494.000.

Tanaka, Kentaro; Kondo, Eiji; Mayama, Mikao; Matsumoto, Kouichi; Kawamura, Yoshimi; and Tsuji, Naoki, to Shionogi & Co., Ltd. Antibiotics PA-41746-B and C. 4,448,723, Cl. 260-245.20T.

Tanaka, Minoru: *See*—
Terahara, Akira; and Tanaka, Minoru, 4,448,979, Cl. 549-292.000.

Tanaka, Steve K.: *See*—
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Tanaka, Yuzuru, to Daishowa Seiki Co., Ltd. Touch sensor. 4,447,958, Cl. 33-174.00L.

Taniguchi, Kazuyoshi. Heating apparatus. 4,449,034, Cl. 219-217.000.

Tanino, Mikio: *See*—
Shimada, Yukio; Iijima, Tetsuya; and Tanino, Mikio, 4,448,034, Cl. 62-161.000.

Tao, Frank: *See*—
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Tassicker, Owen J.: *See*—
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Tatsuno, Takashi: *See*—
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Tatum, John M.: *See*—
Cunningham, James L.; and Tatum, John M., 4,448,615, Cl. 148-13.000.

Taylor, F. Hoyt. Fish strike alarm. 4,447,979, Cl. 43-17.000.

Taylor, Glenn N., to Kendall Company, The. Device for collecting body liquids. 4,447,939, Cl. 128-760.000.

Taylor, Harry E.: *See*—
Bond, Michael E.; and Taylor, Harry E., 4,447,923, Cl. 7-165.000.

Taylor, Jeffrey R.: *See*—
Day, Joseph G.; and Taylor, Jeffrey R., 4,448,604, Cl. 75-63.000.

Tear, Brian; and Othen, David G., to Laporte Industries Limited. Process for the production of aqueous dispersions of pigmentary titonium dioxide. 4,448,609, Cl. 106-308.00N.

Tech Ref, Inc.: *See*—
Houser, Edwin A., 4,448,311, Cl. 206-527.000.

Tee Nee Trailer Company, The: *See*—
DeWalk, Arnold R., 4,448,438, Cl. 280-414.100.

Tektronix, Inc.: *See*—
Dickes, E. Jon, 4,449,059, Cl. 307-228.000.
Telectronics Pty. Ltd.: *See*—
Money, David K.; and Nappholz, Tibor A., 4,448,196, Cl. 128-419.0PT.
Nappholz, Tibor A.; Money, David K.; Swift, Stephen; and Bradbury, Ronald C., 4,448,197, Cl. 128-419.0PT.
Teledyne Industries, Inc.: *See*—
Kotecki, Damian J., 4,449,031, Cl. 219-146.230.
Teletype Corporation: *See*—
DeMuth, Raymond W., 4,448,379, Cl. 248-201.000.
Telnaes, Inge S. Electronic gaming device utilizing a random number generator for selecting the reel stop positions. 4,448,419, Cl. 273-143.00R.
Templeton, John G., to Bulman Products, Inc. Shear cutter. 4,448,101, Cl. 83-374.000.
Tenex Corporation: *See*—
Carrera, Armando, 4,448,625, Cl. 156-243.000.
Terada, Sadatugu: *See*—
Tamaki, Kiyoshi; Murata, Hideki; Terada, Sadatugu; Wada, Tsuneo; Matsubara, Akitoshi; and Takagiwa, Hiroyuki, 4,448,871, Cl. 430-109.000.
Terada, Yutaka; Takahashi, Yukoh; Yachigo, Shinichi; and Ishii, Tamaki, to Sumitomo Chemical Co., Ltd. Acetylene carbamide derivatives, processes for their production, and antioxidants for organic substances which comprise such derivatives as active ingredients. 4,448,915, Cl. 524-93.000.
Terahara, Akira; and Tanaka, Minoru, to Sankyo Company, Limited. ML-236B Derivatives. 4,448,979, Cl. 549-292.000.
Terakura, Yukio: *See*—
Ikenoto, Kazuhito; Katayama, Nobuaki; Terakura, Yukio; and Sasaki, Kan, 4,448,089, Cl. 74-467.000.
Termote, Frank A. A., to DMV-Campina B.V. Process of concentrating acid whey. 4,448,795, Cl. 426-471.000.
Terrell, Christopher, to Chloride Group Limited. Electric storage batteries. 4,448,863, Cl. 429-178.000.
Terry, Ruel C.: *See*—
Stoddard, Xerxes T.; Vaseen, Vesper A.; and Terry, Ruel C., 4,448,252, Cl. 166-263.000.
Texaco Inc.: *See*—
Brennan, Michael E., 4,448,997, Cl. 564-479.000.
Dominguez, Richard J. G., 4,448,904, Cl. 521-160.000.
Lee, Kung-You; Chiou, Jackson K.; and McMahon, Matthew A., 4,448,822, Cl. 427-430.100.
McCoy, David R.; and Gipson, Robert M., 4,448,697, Cl. 252-8.55D.
Texas Instruments Incorporated: *See*—
Baber, Samuel C., 4,448,636, Cl. 156-643.000.
Brantingham, George L., 4,449,233, Cl. 381-53.000.
Thall, Earle S.: *See*—
Ebert, Chris W.; and Thall, Earle S., 4,448,612, Cl. 148-6.350.
Thalmann, Alfred: *See*—
Reich, Fritz; and Thalmann, Alfred, 4,449,038, Cl. 219-535.000.
Thalmann, Dieter, to Rieter Machine Works Ltd. Method of lubricating a spinning or twisting spindle and a spindle lubricated according to the method. 4,448,016, Cl. 57-133.000.
Thayer, Theodore B.: *See*—
Off, Joseph W. A.; Early, Judson H.; Roady, Daniel K.; and Thayer, Theodore B., 4,448,626, Cl. 156-256.000.
Theiling, Louis F., Jr.: *See*—
Warner, Glenn H.; Theiling, Louis F., Jr.; and Freid, Marvin G., 4,448,977, Cl. 549-201.000.
Thewalt, Klaus; Bison, Gunter; and Egger, Heinz, to Dynamit Nobel Aktiengesellschaft. Process for the preparation of 2-aminopropanediol-1,3(serinol). 4,448,999, Cl. 564-495.000.
Thioux, Alain: *See*—
Carre, Jean-Jacques; and Thioux, Alain, 4,448,090, Cl. 74-501.50R.
Thomas, Guy A., to W. S. Shamban & Company. Elastomer energized seal. 4,448,429, Cl. 277-165.000.
Thomas Hunter Limited: *See*—
Edwards, Cyril K.; and Webb, Edward H., 4,448,325, Cl. 220-269.000.
Thompson, Mortimer S., to Tri-Tech Systems International, Inc. Tamper evident closures and packages. 4,448,317, Cl. 215-203.000.
Thompson, Stephen M.: *See*—
Williamson, Eugene; Thompson, Stephen M.; and Evans, Derek K., 4,448,203, Cl. 128-733.000.
Thomson-CSF: *See*—
Doriath, Gerard; Gaudry, Roger; and Hepner, Georges, 4,449,096, Cl. 324-244.000.
Tournois, Pierre, 4,449,193, Cl. 364-604.000.
Thomson Leeds Company, Inc.: *See*—
Weiller, Peter J., 4,448,314, Cl. 211-131.000.
Thorndyke, Lloyd M.: *See*—
Carlson, Douglas M.; Ohman, Randall L.; and Thorndyke, Lloyd M., 4,449,164, Cl. 361-384.000.
Thornton, Jack L. Compound miter saw stand. 4,448,102, Cl. 83-471.100.
Thorpe, David: *See*—
Bruyninckx, Alphonse E.; Brooks, Martin F.; and Thorpe, David, 4,448,938, Cl. 525-457.000.
Thorsell Holdings Ltd.: *See*—
Thorsell, Stanley E., 4,448,004, Cl. 52-241.000.
Thorsell, Stanley E., to Robert S. Agar Inc.; Thorsell Holdings Ltd.; and Mudlake Holdings Ltd. Channel and cut-out structure for removeable partition wall. 4,448,004, Cl. 52-241.000.
Thummel, Rudolph C.: *See*—
Riebli, Peter; Fischer, Hanspeter; Thummel, Rudolph C.; and Hubele, Adolf, 4,448,773, Cl. 424-211.000.
Tijburg, Rudolf P.: *See*—
Kuiken, Hendrik K.; and Tijburg, Rudolf P., 4,448,635, Cl. 156-637.000.
Timex Corporation: *See*—
D'Onofrio, Anthony; and Gunzy, Jack, 4,449,075, Cl. 315-169.300.
Timken Company, The: *See*—
Otto, Dennis L., 4,448,461, Cl. 308-187.200.
Titus, Robert D.: *See*—
Bach, Nicholas J.; Kornfeld, Edmund C.; and Titus, Robert D., 4,448,990, Cl. 564-167.000.
Tobi, Nobuo: *See*—
Isogai, Kiyoshi; Tobi, Nobuo; Koga, Itsuo; Takeuchi, Masahiko; Okamoto, Makoto; Ohmori, Nobuo; and Takita, Naka, 4,448,754, Cl. 422-179.000.
Todd, Alec: *See*—
Clark, Barry P.; Ross, William J.; and Todd, Alec, 4,448,787, Cl. 424-283.000.
Tohoku Metal Industries, Inc.: *See*—
Nishino, Hisao; and Kondo, Shigeru, 4,449,173, Cl. 363-21.000.
Tokarzewski, Richard J.; and Schreiber, William L., to International Flavors & Fragrances Inc. Acetyl dimethylbutylcyclohexene and organoleptic uses therefor. 4,449,009, Cl. 568-377.000.
Tokarzewski, Richard J.: *See*—
Sprecker, Mark A.; Hanna, Marie R.; Tokarzewski, Richard J.; Belko, Robert P.; Watkins, Hugh; and Vock, Manfred H., 4,448,984, Cl. 560-256.000.
Tokitsu, Naoki; Itoh, Toshihiko; and Fujiwara, Toshitaka, to Nippondenso Co., Ltd. Portable memory device. 4,449,206, Cl. 365-229.000.
Toko, Inc.: *See*—
Ishii, Masanori; and Ishikawa, Hiroichi, 4,449,175, Cl. 363-26.000.
Tokumaru, Hisashi, to Minolta Camera Kabushiki Kaisha. Image transmitter for copying apparatus of slit exposure scanning type. 4,448,499, Cl. 350-573.000.
Tokyo Electric Co., Ltd.: *See*—
Matsuda, Susumu; and Kawaguchi, Katuhiko, 4,448,559, Cl. 400-637.400.
Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Ando, Hideo, 4,449,138, Cl. 346-135.100.
Arinobu, Mutsihiro; and Suzuki, Isamu, 4,448,023, Cl. 60-644.100.
Kuwabara, Eiji; Sakata, Takayoshi; Kawauchi, Noboru; Ide, Yuuichi; and Matsuo, Takeshi, 4,448,597, Cl. 62-176.600.
Matsumoto, Kenzo, 4,448,201, Cl. 128-660.000.
Osada, Kimio, 4,449,072, Cl. 315-58.000.
Satoh, Seiichi, 4,449,026, Cl. 219-10.55B.
Takemura, Yasuhiko; and Akutsu, Fumihiko, 4,448,075, Cl. 73-626.000.
Totoki, Takashi; and Kawakami, Susumu, 4,449,060, Cl. 307-247.00R.
Wakayama, Hideaki; Fujiwara, Jyunji; and Doi, Kanya, 4,449,021, Cl. 200-144.00B.
Yokoyama, Nobuo, 4,449,071, Cl. 315-53.000.
Yoshida, Syoichi, 4,448,211, Cl. 137-112.000.
Tolbert, John T.: *See*—
Knapp, George W.; Spaulding, Bernard B.; and Tolbert, John T., 4,449,202, Cl. 364-900.000.
Tolentino, Luisito A., to General Electric Company. Method of making organosiloxanes and alkyl halides from dialkyldialkoxysilanes. 4,448,981, Cl. 556-459.000.
Toliver, Samuel: *See*—
Agnor, William C.; Lafferty, Edwin C.; and Toliver, Samuel, 4,449,104, Cl. 330-279.000.
Tomi, Toshikazu: *See*—
Ishida, Hiroshi; Kitagawa, Takaichi; Sumida, Yasuji; Nanba, Satoshi; and Tomi, Toshikazu, 4,448,519, Cl. 355-73.000.
Tomy Kogyo Co., Inc.: *See*—
Kaga, Takashi; and Kobayashi, Nobuo, 4,448,409, Cl. 272-8.00N.
Toppan Printing Co., Ltd.: *See*—
Matsudaira, Nagahisa; Yoshida, Kaneki; Fukuyoshi, Kenzo; and Masui, Kiyoshi, 4,448,493, Cl. 350-357.000.
Toray Silicone Company, Ltd.: *See*—
Matsushita, Takao, 4,448,840, Cl. 428-266.000.
Torrington Company, The: *See*—
Moroney, John J., 4,448,550, Cl. 384-127.000.
Tota, Giuseppe. Spreadable bar for eyeglass frames provided with a spring hinge. 4,448,502, Cl. 351-153.000.
Totoki, Takashi; and Kawakami, Susumu, to Tokyo Shibaura Denki Kabushiki Kaisha. Preset circuit for a clocked flip-flop. 4,449,060, Cl. 307-247.00R.
Totsu, Katsuyaki. Electrically driven screw-driver. 4,448,098, Cl. 81-467.000.
Totsuka, Kaoru: *See*—
Ishigaki, Yukinobu; Haramoto, Yutaka; and Totsuka, Kaoru, 4,449,106, Cl. 333-14.000.
Tournois, Pierre, to Thomson-CSF. Bidimensional correlation device. 4,449,193, Cl. 364-604.000.
Toussaint, Etienne G., to Societe Anonyme des Etablissements Adrien de Backer. Power supply housings for exterior light apparatus. 4,448,444, Cl. 361-331.000.
Toyama Chemical Co., Ltd.: *See*—
Hori, Takako; Yoshida, Chosaku; Kiba, Yasuo; Takeno, Ryuko; Nakano, Joji; Nitta, Jun; Kishimoto, Sumiko; Murakami, Shohachi; Tsuda, Hisatsugu; and Saikawa, Isamu, 4,448,963, Cl. 544-367.000.

Toyo Kogyo Co., Ltd.: *See*—
Nakamoto, Hiromasa; and Miyoshi, Takeshi, 4,448,276, Cl. 180-90.000.
Toyoshima, Shigeshi; Fujimura, Hajime; Ito, Shunsuke; and Kondo, Yasuji, to Maruzen Pharmaceutical Co., Ltd. 11-Deoxoglycyrrhetinic acid hydrogen maleate, process for its production, and its use as a medicine. 4,448,788, Cl. 424-313.000.
Toyota Jidosha Kabushiki Kaisha: *See*—
Isogai, Kiyoshi; Tobi, Nobuo; Koga, Itsuo; Takeuchi, Masahiko; Okamoto, Makoto; Ohmori, Nobuo; and Takita, Naka, 4,448,754, Cl. 422-179.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
Ikemoto, Kazuhito; Katayama, Nobuaki; Terakura, Yukio; and Sasaki, Kan, 4,448,089, Cl. 74-467.000.
Katagiri, Masayoshi; and Kondo, Toshio, 4,448,287, Cl. 188-73.310.
Kitagawa, Junji; Akita, Shigeyuki; Kasegawa, Norimichi; and Nakamura, Akira, 4,448,275, Cl. 180-79.100.
Moriyama, Masakazu; Saito, Takao; Ido, Akinori; Matsushima, Takeo; and Hara, Hisao, 4,448,035, Cl. 62-176.600.
Trane Refrigeration International, Inc.: *See*—
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Trevitt, Donna J.: *See*—
Amelio, William J.; Lemon, Gary K.; Markovich, Voya; Panasik, Theodore; Sambucetti, Carlos J.; and Trevitt, Donna J., 4,448,804, Cl. 427-98.000.
Trezise, Richard; Boldt, John; and Gnutzman, Keith, to Chroma. Cartridge for matrix printer. 4,448,556, Cl. 400-208.000.
Tri-Tech Systems International, Inc.: *See*—
Thompson, Mortimer S., 4,448,317, Cl. 215-203.000.
Trinks, Walter; and Kohler, Kurt-Albrecht. Hollow explosive body. 4,448,128, Cl. 102-476.000.
Triplett, John W., to University of Kentucky Research Foundation, The. Alteration of gallium biodistribution using indium complexes for enhanced early imaging. 4,448,763, Cl. 424-1.100.
Trushenski, Scott P., to Standard Oil Company. Selecting salinities in micellar flooding. 4,448,698, Cl. 252-8.55D.
TRW Inc.: *See*—
Basov, Emma; Grois, Igor; Margolin, Mark; and Berg, Alan, 4,448,481, Cl. 350-96.200.
Lathlaen, Richard A., 4,448,482, Cl. 350-96.210.
Ryley, James F., Jr., 4,448,483, Cl. 350-96.210.
Tsau, Josef H., to G. D. Searle & Co. Dipeptide sweetener-metal complexes. 4,448,716, Cl. 260-112.50R.
Tschang, Pin-Seng, to Eastman Kodak Company. Light valve imaging apparatus and method having supplemental exposure control. 4,449,153, Cl. 358-296.000.
Tseng, Ching-Ho. Internal combustion rotary power plant system. 4,448,161, Cl. 123-237.000.
Tseng, Samuel C.: *See*—
Fleek, Arthur E.; and Tseng, Samuel C., 4,448,123, Cl. 101-93.040.
Tsubaki, Kazumi; Morinaga, Hiroshi; and Yukawa, Joei, to Nissan Chemical Industries, Ltd. Epoxy resin and the process for its production. 4,448,948, Cl. 528-95.000.
Tsubouchi, Kazuo: *See*—
Mikoshiba, Nobuo; Tsubouchi, Kazuo; and Wasa, Kenji, 4,448,525, Cl. 356-73.000.
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Tsuchiya, Toshiaki; and Itsumi, Manabu, to Nippon Telegraph & Telephone Public Corporation. Semiconductor memory device. 4,449,142, Cl. 357-23.000.
Tsuchiyama, Tadashi: *See*—
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Tsuda, Hiroshi: *See*—
Hashimoto, Shintaro; Masuzawa, Sigeaki; Tsuda, Hiroshi; Sibata, Shinya; and Nakano, Masahiro, 4,449,232, Cl. 381-51.000.
Washizuka, Isamu; Ikemoto, Yutaka; and Tsuda, Hiroshi, 4,448,542, Cl. 368-63.000.
Tsuda, Hisatsugu: *See*—
Hori, Takako; Yoshida, Chosaku; Kiba, Yasuo; Takeno, Ryuko; Nakano, Joji; Nitta, Jun; Kishimoto, Sumiko; Murakami, Shohachi; Tsuda, Hisatsugu; and Saikawa, Isamu, 4,448,963, Cl. 544-367.000.
Tsuda, Yutaka, to Pipe Master International Ltd. Method for installing lines, pipes or cables underground. 4,448,567, Cl. 405-43.000.
Tsuge, Kimihiro: *See*—
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Tsuji, Naoki: *See*—
Tanaka, Kentaro; Kondo, Eiji; Mayama, Mikao; Matsumoto, Kouichi; Kawamura, Yoshimi; and Tsuji, Naoki, 4,448,723, Cl. 260-245.20T.
Tsuji, Nobuo: *See*—
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Tsujikado, Seiji: *See*—
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Tsukagoshi, Terukazu: *See*—
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Tsuruoka, Takashi: *See*—
Takematsu, Tetsuo; Konnai, Makoto; Tachibana, Kunitaka; Tsuruoka, Takashi; Inouye, Shigeharu; and Watanabe, Tetsuro, 4,448,601, Cl. 71-86.000.
Tsuruta, Hisato: *See*—
Kashiwaya, Mineo; Yamada, Kinsaku; Tanabe, Yoshiyuki; Oyama, Yoshishige; Kuroiwa, Hiroshi; and Tsuruta, Hisato, 4,448,172, Cl. 123-494.000.
Tsuruta, Katsuji: *See*—
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Tuftco Corporation: *See*—
Curtis, Kenneth C.; and Densmore, John C., 4,448,137, Cl. 112-79.00R.
Tupper, Leland C.: *See*—
Lippitt, David L.; Espelage, Paul M.; Tupper, Leland C.; Walker, Lorea H.; and Weiss, Herbert W., 4,449,087, Cl. 318-723.000.
Turnbull, Fred G., to General Electric Company. Single phase regeneration with a polyphase rectification power circuit. 4,449,176, Cl. 363-81.000.
Turner, Paul F., to BSD Medical Corporation. Invasive hyperthermia apparatus and method. 4,448,198, Cl. 128-422.000.
Turro, Nicholas J., to Columbia University in the City of New York, The Trustees of. Methods employing magnetic fields for controlling emulsion polymerization. 4,448,657, Cl. 204-155.000.
Tward, Emanuel, to Tward 2001 Limited. Method of measuring and indicating fluid levels. 4,448,071, Cl. 73-304.00C.
Tward, Emanuel, to Tward 2001 Limited. Fluid level measuring system. 4,448,072, Cl. 73-304.00C.
Tward 2001 Limited: *See*—
Tward, Emanuel, 4,448,071, Cl. 73-304.00C.
Tward, Emanuel, 4,448,072, Cl. 73-304.00C.
Twedt, Lynn O.: *See*—
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Uchida, Yasumi: *See*—
Shiratsuchi, Masami; Ishihama, Hiroshi; and Uchida, Yasumi, 4,448,989, Cl. 564-165.000.
Uchide, Hitoshi: *See*—
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Uchigasaki, Isao: *See*—
Osada, Yuichi; Kasai, Shozo; Okada, Yasunori; Uchigasaki, Isao; Oshima, Toyoji; Mukoyama, Yoshiyuki; and Nishizawa, Hiroshi, 4,448,844, Cl. 428-375.000.
Uchiyama, Masaki: *See*—
Imai, Eiichi; Uchide, Hitoshi; Murakawa, Kazunori; Uchiyama, Masaki; Ochi, Hisayuki; Urawa, Motoo; Takagi, Seiichi; and Mitsuhashi, Yasuo, 4,448,870, Cl. 430-107.000.
Ueda, Minoru: *See*—
Inohara, Shizuo; Masuda, Mitsuya; Iyehara, Sadahiro; Ueda, Minoru; and Yamamoto, Keisuke, 4,449,148, Cl. 358-230.000.
Uesugi, Toshiaki; Ogitani, Kazutaka; and Inden, Toshikazu, to Chino Works Ltd. Multiple position recorder. 4,449,129, Cl. 346-61.000.
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Jeschke, Willi; Rambausek, Hugo; Uhrig, Rudolf-Karl; and Loffler, Gerhard, 4,448,533, Cl. 356-416.000.
Umesaki, Shigeo: *See*—
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Unarco Industries, Inc.: *See*—
Obermeyer, James H., 4,448,315, Cl. 211-191.000.
Union Carbide Corporation: *See*—
Cheung, Harry, 4,448,595, Cl. 62-31.000.
Francis, Arthur W., Jr.; Nowotarski, Mark S.; and Solomon, Jack, 4,448,616, Cl. 148-16.000.
Warner, Glenn H.; Theiling, Louis F., Jr.; and Freid, Marvin G., 4,448,977, Cl. 549-201.000.
Union Oil Company of California: *See*—
Deering, Roland F., 4,448,668, Cl. 208-11.00R.
Hass, Robert H., 4,448,899, Cl. 521-32.000.
Uniroyal, Inc.: *See*—
Weaver, Ebon P., 4,449,934, Cl. 525-184.000.
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United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Social Services in Her Britannic Majesty's Government of the: *See*—
Colman, Geoffrey; and Russell, Roy R. B., 4,448,768, Cl. 424-92.000.
U.S. Environmental Products, Inc.: *See*—
White, A. R., Jr., 4,448,696, Cl. 210-711.000.
United States Gypsum Company: *See*—
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Administrator, National Aeronautics and Space Administration: *See*—
Hallberg, Frederick C.; and Morgan, Clyde J., 4,448,406, Cl. 269-224.000.
Air Force: *See*—
Bishop, Wayne S.; and Marsh, Richard A., 4,448,859, Cl. 429-50.000.
Bridges, William F., 4,448,078, Cl. 73-766.000.
Evans, David W., 4,448,486, Cl. 350-162.120.
Frerking, Marvin E., 4,449,032, Cl. 219-210.000.
Husbands, Charles R., 4,449,043, Cl. 250-205.000.
Kauffman, Robert E.; Rhine, Wendell E.; and Saba, Costandy S., 4,448,887, Cl. 435-60.000.
Kennel, John M., 4,448,086, Cl. 74-5.00R.
Kromrey, Robert V., 4,448,742, Cl. 264-270.000.
McCarty, Fred B., 4,447,947, Cl. 29-825.000.
Reinhardt, Bruce A.; and Arnold, Fred E., 4,449,001, Cl. 568-31.000.
Reznick, Steven G.; and Franke, Milton E., 4,448,354, Cl. 239-265.170.
Robertson, Glenn D., Jr., 4,448,645, Cl. 204-15.000.
Shinkle, Kurt D., 4,448,377, Cl. 248-178.000.
Sliney, James G., Jr., 4,449,242, Cl. 383-103.000.
Swigert, Charles J., 4,449,235, Cl. 381-71.000.
Army: *See*—
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Duerksen, Walter K.; Googin, John M.; and Napier, Bradley, Jr., 4,448,701, Cl. 252-49.300.
Manning, Frank W., 4,449,049, Cl. 250-377.000.
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Richards, Powell; Srivastava, Suresh C.; and Meinken, George E., 4,448,762, Cl. 424-1.100.
Schuller, Ivan K.; and Falco, Charles M., 4,448,854, Cl. 428-611.000.
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Zehner, William J.; and Skinner, David P., 4,449,209, Cl. 367-102.000.
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Kroon, Dirk J.; and Robers, Klaas H. J., 4,449,198, Cl. 364-900.000.
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Kuhnert, Gottfried, 4,448,045, Cl. 66-120.000.
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Triplett, John W., 4,448,763, Cl. 424-1.100.
University of Miami: *See*—
Ryan, James W.; and Chung, Alfred, 4,448,715, Cl. 260-112.50R.
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Cava, Michael P.; and Dominguez, Domingo, 4,448,724, Cl. 260-351.500.
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Meno, Frank, 4,449,084, Cl. 318-640.000.
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UPA Technology, Inc.: *See*—
Pinches, Philip B.; and Lieber, Sidney, 4,449,048, Cl. 250-308.000.
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Barsa, Edward A.; and Sherwood, Philip W., 4,448,816, Cl. 427-388.200.
Magerlein, Barney J., 4,448,970, Cl. 548-336.000.
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USM Corporation: *See*—
Bond, Michael E.; and Taylor, Harry E., 4,447,923, Cl. 7-165.000.
Dorosz, Adolph S., 4,448,139, Cl. 112-221.000.
Grosberg, Joseph J., 4,447,962, Cl. 33-286.000.
Kondo, Yoshiteru, 4,449,092, Cl. 323-271.000.
Usui, Fumio. Winding method and apparatus. 4,448,015, Cl. 57-3.000.
Utzerath, James. Line segment video display apparatus. 4,449,200, Cl. 364-900.000.
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Morrison, Charles F., Jr., 4,448,659, Cl. 204-192.00R.
Vaeth, Guenter: *See*—
Sarnecki, Wilhelm; Kovacs, Jenoe; Loeser, Werner; Rudolf, Peter; and Vaeth, Guenter, 4,448,761, Cl. 423-632.000.
Vail, David K., to Rockwell International Corporation. Time-of-day clock having a temperature compensated low power frequency source. 4,448,543, Cl. 368-202.000.
Valat, Claude R. Universal bench for the assembly, testing and repair of motor vehicles. 4,447,961, Cl. 33-180.0AT.
Vandenham, Elbert H.: *See*—
Bashford, Anthony J.; and Vandenham, Elbert H., 4,448,407, Cl. 271-8.00A.
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van der Sluys, Willem L. N.; and Hermans, Mathias L., to U.S. Philips Corporation. Method of operating a bimodal heat pump, as well as bimodal heat pump for using said method. 4,448,596, Cl. 62-101.000.
Vandervalk, Casey S., to Delphax Systems. Duplex imaging with pressure transfixing. 4,448,872, Cl. 430-126.000.
van der Weerdt, Antonius J. A.; and Apeldoorn, Willem, to Naarden International N.V. Perfume compositions and perfumed articles containing spiro-undecanones and -undecenones as perfume base. 4,448,712, Cl. 252-522.00R.
van Hatten, Hendricus W. M., to AMGAS B.V. Heat-insulating pipe element. 4,448,219, Cl. 138-149.000.
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van Oene, Henk: *See*—
Cheung, Mo-Fung; Garrett, David L., Jr.; and van Oene, Henk, 4,448,941, Cl. 525-528.000.
Van Stone, Robert A.: *See*—
Reid, Walter L., Jr.; Van Stone, Robert A.; and Delano, Ralph L., 4,448,290, Cl. 188-82.700.
van't Riet, Bartholomeus; Elford, Howard L.; and Wampler, Galen L. Hydroxybenzohydroxamic acids, benzamides and esters and related compounds as ribonucleotide reductase inhibitors. 4,448,730, Cl. 260-500.50H.
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Aldinger, Darrell D.; and Van Wagoner, Roger B., 4,448,351, Cl. 239-25.000.
Varian Associates, Inc.: *See*—
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Schulte, Heinz; and Kirchhoff, Werner, 4,448,862, Cl. 429-136.000.
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Vaseen, Vesper A.: *See*—
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VEB Kombinat Textima: *See—*
Burov, Vadim K.; Vanjuskin, Boris M.; Voskoboev, Anatolij E.; Kon'kov, Nikolaj G.; Orechov, Vsevolod D.; Pismannik, Konstantin D.; Svin'in, Michail P.; Fedotov, Michail I.; Damerau, Werner; Dulling, Achim; Heger, Adolf; Reichardt, Gerd; and Wilde, Gotthard, 4,448,048, Cl. 68-5.00E.

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Vergason, Gary E.: *See—*
Bergman, Clark; Vergason, Gary E.; Clark, Robert; and Bosak, Shannon, 4,448,799, Cl. 427-37.000.

Verma, Deepak K., to Southwire Company. Hydrostatic assist during rolling of cast metal. 4,448,052, Cl. 72-57.000.

Vetter, Manfred. Apparatus for sealing leaks. 4,448,218, Cl. 138-99.000.

Vibranetics, Inc.: *See—*
Plummer, Virgil C., Jr., 4,448,332, Cl. 222-196.000.

Vicino, Robert K.; Cooper, Dale L.; Pembleton, Lauren M.; and Allen, Constance C. Inflatable bottle replica. 4,447,974, Cl. 40-538.000.

Victor Company of Japan, Ltd.: *See—*
Ishigaki, Yukinobu; Haramoto, Yutaka; and Totsuka, Kaoru, 4,449,106, Cl. 333-14.000.

Vigar, James M.: *See—*
Barclay, Donald J.; Morgan, William M.; and Vigar, James M., 4,448,648, Cl. 204-51.000.
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Vilaseca, Hilario S.; and Mas, Ramon B. Dispenser for tubes of fluent material. 4,448,329, Cl. 222-96.000.

Vincent, Robert R., to Cooper Industries, Inc. Pneumatic hammer. 4,448,262, Cl. 173-16.000.

Viniczay, Gabriella F.; and Roehrich, Siegfried, to Aktiengesellschaft Adolf Saurer. Control apparatus for the electromagnetic brake of a weaving machine. 4,448,295, Cl. 192-125.00A.

Vining, Richard A.: *See—*
Chao, Shun-lung; and Vining, Richard A., 4,448,028, Cl. 62-3.000.

Vinzant, Michael B.: *See—*
Speegle, Steven C.; Schwendemann, Kenneth L.; Vinzant, Michael B.; Crow, Robert W.; and Mondon, Cary G., 4,448,216, Cl. 137-630.000.

Vital Metrics, Inc.: *See—*
Parrish, John H., 4,448,207, Cl. 128-771.000.

Vochelli, Julian P., to Hollywood Accessories. Interior automotive sunshade with ring hinges. 4,448,005, Cl. 52-473.000.

Vock, Manfred H.: *See—*
Sprecker, Mark A.; Hanna, Marie R.; Tokarzewski, Richard J.; Belko, Robert P.; Watkins, Hugh; and Vock, Manfred H., 4,448,984, Cl. 360-256.000.

Voest-Alpine AG: *See—*
Weber, Ralph; Rollinger, Bernt; Hauk, Rolf; Nagle, Michael; and Rinner, Bernhard, 4,448,402, Cl. 266-183.000.

Vogt, Martin C.: *See—*
Scheithauer, Richard A.; Miller, Michael J.; MacInnis, Martin B.; Christini, James N.; and Vogt, Martin C., 4,448,755, Cl. 423-56.000.

Voillot, Herve , to Creusot-Loire. Apparatus for advancing elongate objects around a curve. 4,448,299, Cl. 198-457.000.

Volk, Benjamin: *See—*
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Volk, Joseph, Sr., to Volk, Benjamin. Apparatus for hulling pistachio nuts. 4,448,115, Cl. 99-574.000.

Volkamer, Klaus: *See—*
Lindner, Alfred; Volkamer, Klaus; and Wagner, Ulrich, 4,448,643, Cl. 203-34.000.

von Alpen, Ulrich; and Nijhawan, Subash C., to Varta Batterie Aktiengesellschaft. Galvanic element with integral getter. 4,448,860, Cl. 429-57.000.

von Bergen, Ernst P., to Howaldtswerke-Deutsche Werft Aktiengesellschaft Hamburg und Kiel. Shaft seal assembly with inflatable annular member. 4,448,425, Cl. 277-34.000.

von Bonin, Wulf: *See—*
Drinkuth, Franz; von Bonin, Wulf; Schapel, Dietmar; and Lorenz, Artur, 4,448,914, Cl. 524-32.000.

von Nordenskjold, Reinhart. Apparatus for final clearing of waste water. 4,448,689, Cl. 210-521.000.

Voser, Othmar, to Kupferdraht-Isolierwerk AG Wildegg. Overhead cable with tension-bearing means. 4,449,012, Cl. 174-70.00A.

Voskoboev, Anatolij E.: *See—*
Burov, Vadim K.; Vanjuskin, Boris M.; Voskoboev, Anatolij E.; Kon'kov, Nikolaj G.; Orechov, Vsevolod D.; Pismannik, Konstantin D.; Svin'in, Michail P.; Fedotov, Michail I.; Damerau, Werner; Dulling, Achim; Heger, Adolf; Reichardt, Gerd; and Wilde, Gotthard, 4,448,048, Cl. 68-5.00E.

Vosper, George W. Fuel injector. 4,448,160, Cl. 123-297.000.

W. R. Grace & Co.: *See—*
Cogliano, Joseph A., 4,448,830, Cl. 428-40.000.

W. R. Grace & Co., Cryovac Division: *See—*
Schirmer, Henry G., 4,448,792, Cl. 426-113.000.

W. S. Shamban & Company: *See—*
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Wacker-Chemitronic Gesellschaft fur Elektronik-Grundstoffe mbH: *See—*
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Wada, Masami: *See—*
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Wadsworth, Jeffrey: *See—*
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Wagner, Ulrich: *See—*
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Wajszczuk, Waldemar J.; Palko, Tadeusz; and Pawlicki, Grzegorz. Biological signal amplifier system with noise level reduction. 4,448,202, Cl. 128-709.000.

Wakamiya, Koichi, to Nippon Kogaku K. K. Great aperture ratio lens. 4,448,497, Cl. 350-464.000.

Wakatsuki, Goroei: *See—*
Watanabe, Masaki; and Wakatsuki, Goroei, 4,448,279, Cl. 180-297.000.

Wakayama, Hideaki; Fujiwara, Jyunji; and Doi, Kanya, to Tokyo Shibaura Denki Kabushiki Kaisha. Vacuum circuit breaker. 4,449,021, Cl. 200-144.00B.

Walawender, Walter P.: *See—*
Fan, Liang-tseng; and Walawender, Walter P., 4,448,589, Cl. 48-197.00R.

Walker Equipment Corporation: *See—*
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Walker, John R.: *See—*
Barrat, Christian R.; Walker, John R.; and Wevers, Jean, 4,448,699, Cl. 252-8.750.

Walker, Loren H.: *See—*
Cutler, John H.; D'Atre, John D.; and Walker, Loren H., 4,449,088, Cl. 318-798.000.
Lippitt, David L.; Espelage, Paul M.; Tupper, Leland C.; Walker, Loren H.; and Weiss, Herbert W., 4,449,087, Cl. 318-723.000.

Walker, Samuel B.: *See—*
Kelly, Guy M.; Roes, John B.; Walker, Samuel B.; and Beach, Bruce A., 4,449,186, Cl. 364-407.000.

Walker, Wesley F., Jr., to Walker Equipment Corporation. Anti-side tone transmitter. 4,449,236, Cl. 381-91.000.

Wallace Computer Services, Inc.: *See—*
Chang, John C. H.; and Dimitriou, Theodore, 4,448,445, Cl. 346-206.000.

Wallentowitz, Henning: *See—*
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Wallick, George C.: *See—*
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Wallman, P. Henrik, to Chevron Research Company. Retorting process for hydrocarbonaceous solids. 4,448,666, Cl. 208-11.00R.

Walls, John E.; and Dhillon, Major S., to American Hoechst Corporation. Negative working diazo contact film. 4,448,873, Cl. 430-157.000.

Walls, John E.: *See—*
Gillich, Thomas N.; Walls, John E.; Wanat, Stanley F.; and Rozell, William J., 4,448,647, Cl. 204-33.000.

Walter, Klaus. Water pressure jet cleaner. 4,447,917, Cl. 4-256.000.

Walter, Lothar: *See—*
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Walth, Lee A.: *See—*
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Waltmann, Ernst: *See—*
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Wampler, Galen L.: *See—*
van't Riet, Bartholomeus; Elford, Howard L.; and Wampler, Galen L., 4,448,730, Cl. 260-500.50H.

Wanat, Stanley F.: *See—*
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Wang, Chyuan-chyuan: *See—*
Wang, Huei-Hsiung; and Wang, Chyuan-chyuan, 4,448,936, Cl. 525-424.000.

Wang, Donald G. J., to Celanese Corporation. Process for the production of semipermeable polybenzimidazole membranes with low temperature annealing. 4,448,687, Cl. 210-500.200.

Wang, Huei-Hsiung; and Wang, Chyuan-chyuan. Polyurethane resin composition. 4,448,936, Cl. 525-424.000.

Warner, Glenn H.; Theiling, Louis F., Jr.; and Freid, Marvin G., to Union Carbide Corporation. Stabilized acetal-acid compositions. 4,448,977, Cl. 549-201.000.

Warner-Lambert Company: *See—*
Yang, Robert K., 4,448,789, Cl. 426-5.000.

Warner & Swasey Company, The: *See—*
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Warshawsky, Jerome. Vertical swing bracket. 4,449,169, Cl. 362-413.000.

Warshawsky, Jerome. Lamp support. 4,449,170, Cl. 362-413.000.

Warshawsky, Jerome. Lamp support for pharmacy-type lamp. 4,449,171, Cl. 362-413.000.

Warshawsky, Jerome. Lamp swing units. 4,449,172, Cl. 362-427.000.

Wasa, Kenji: *See*—
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Waschka, George A., Jr., to Harris Corporation. Local orderwire facility for fiber optic communication system. 4,449,247, Cl. 455-9.000.

Waschka, George A., Jr.: *See*—
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Washizuka, Isamu; Ikemoto, Yutaka; and Tsuda, Hiroshi, to Sharp Kabushiki Kaisha. Electronic timepiece. 4,448,542, Cl. 368-63.000.

Watanabe, Hideaki: *See*—
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Watanabe, Kazuhide: *See*—
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Watanabe, Masaki; and Wakatsuki, Goroei, to Honda Giken Kogyo Kabushiki Kaisha. Vehicle drive unit. 4,448,279, Cl. 180-297.000.

Watanabe, Masaru; Yamauchi, Nobuharu; Hashimoto, Naoki; and Tamama, Tetsuo. Radio wave angle of incidence measurement apparatus. 4,449,192, Cl. 364-559.000.

Watanabe, Michinori, to Hitachi, Ltd. Tape threading device. 4,448,369, Cl. 242-195.000.

Watanabe, Minoru: *See*—
Muto, Kenji; Watanabe, Minoru; Hatta, Takao; Sugaya, Toru; Takemoto, Yoshinori; and Nakamizo, Nobuhiro, 4,448,964, Cl. 546-194.000.

Watanabe, Teruo; and Ishikawa, Masaaki, to Mitutoyo Mfg. Co., Ltd. Instrument for measuring internal dimensions. 4,447,959, Cl. 33-178.00E.

Watanabe, Tetsuro: *See*—
Takematsu, Tetsuo; Konnai, Makoto; Tachibana, Kunitaka; Tsuruoka, Takashi; Inouye, Shigeharu; and Watanabe, Tetsuro, 4,448,601, Cl. 71-86.000.

Watkins, Herbert E.: *See*—
Maurer, Edward J., Jr.; Baumann, Hanns U.; and Watkins, Herbert E., 4,447,996, Cl. 52-79.100.

Watkins, Hugh: *See*—
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Watson-Bowman Associates, Inc.: *See*—
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Watson, Stewart C., to Watson-Bowman Associates, Inc. Reinforced elastomer products. 4,448,920, Cl. 524-439.000.

Wausau Metals Corporation: *See*—
Weber, Ronald J.; and Pagel, Gene T., 4,447,985, Cl. 49-400.000.

Wayne, Albert, to Westinghouse Electric Corp. Coil winding apparatus. 4,448,054, Cl. 72-146.000.

Wayne H. Coloney Co., Inc.: *See*—
Beall, Charles D., 4,449,083, Cl. 318-602.000.

Weaver, Ebon P., to Uniroyal, Inc. Blends of ionic elastomers and nylon. 4,448,934, Cl. 525-184.000.

Weaver, Richard A.; Niedzielski, James H.; Herronen, John R.; Wright, Joseph M.; and Prime, Ronald M., to Prime & Weaver Investment Company. Roller conveyor construction. 4,448,302, Cl. 198-781.000.

Webb, Edward H.: *See*—
Edwards, Cyril K.; and Webb, Edward H., 4,448,325, Cl. 220-269.000.

Webber, Robert C., to Lockheed Corporation. Method and apparatus for making filament wound cylindrical structres. 4,448,624, Cl. 156-175.000.

Weber, Andrew M.: *See*—
Bremer, Noel J.; Dria, Dennis E.; and Weber, Andrew M., 4,448,893, Cl. 502-209.000.

Weber, Bernhard G., to Sulzer Brothers Limited. Expandable medullary canal plug. 4,447,915, Cl. 3-1.900.

Weber-Henning, Hans; and Weber, Peter. Longitudinally adjustable ski pole. 4,448,442, Cl. 280-823.000.

Weber, Peter: *See*—
Weber-Henning, Hans; and Weber, Peter, 4,448,442, Cl. 280-823.000.

Weber, Ralph; Rollinger, Bernt; Hauk, Rolf; Nagle, Michael; and Rinner, Bernhard, to Korf Engineering GmbH; and Voest-Alpine AG. Apparatus for directly making liquid pig-iron from coarse iron ore. 4,448,402, Cl. 266-183.000.

Weber, Ronald J.; and Pagel, Gene T., to Wausau Metals Corporation. Window structure. 4,447,985, Cl. 49-400.000.

Webster, Douglas G. Motor speed control system. 4,449,082, Cl. 318-326.000.

Weeks, Walter: *See*—
Weinzettel, Michael; and Weeks, Walter, 4,448,304, Cl. 206-223.000.

Wegmann, Urs, to Balzers Aktiengesellschaft. Cathode arrangement for sputtering material from a target in a cathode sputtering unit. 4,448,653, Cl. 204-298.000.

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Wozniak, Jan C., to Serni Limited. Rail sleepers with rail clamping devices. 4,448,349, Cl. 238-62.000.
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Yoshida, Syoichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Three-way valve. 4,448,211, Cl. 137-112.000.
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Tsubaki, Kazumi; Morinaga, Hiroshi; and Yukawa, Joei, 4,448,948, Cl. 528-95.000.
Zaczepinski, Sioma; Billimoria, Rustom M.; Tao, Frank; Lington, Christopher G.; and Plumlee, Karl W., to Exxon Research and Engineering Co. Use of ammonia to reduce the viscosity of bottoms streams produced in hydroconversion processes. 4,448,665, Cl. 208-8.0LE.
Zahnradfabrik Friedrichshafen Aktiengesellchaft: *See*—
Binger, Bernhard, 4,448,092, Cl. 74-770.000.
Zaino, Luigi, to Nouva Zarine S.p.A. Construzione Macchine E Stampi Per Calzature. Shoe with its vamp zonally covered with injected plastics material securely bonded to the fabric. 4,447,967, Cl. 36-45.000.
Zanichelli, Giuseppe. Dressing or preserving liquid filling unit for vacuum filling machines. 4,448,227, Cl. 141-57.000.
Zankl, Robert H. Pivotal rivet assembly. 4,448,563, Cl. 403-161.000.
Zaruba, John V.; and Disko, Harry, to Marvin Glass & Associates. Board game having apertured, marker-receivable playing pieces. 4,448,421, Cl. 273-243.000.
Zazzu, Victor: *See*—
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Zehner, William J.; and Skinner, David P., to United States of America, Navy. Utilization of entire transmitted bandwidth in continuous transmission FM sonar. 4,449,209, Cl. 367-102.000.
Zeller, Chris; and Ohmstedt, Jeff. Toboggan platform. 4,448,433, Cl. 280-18.000.
Zener, Clarence: *See*—
Molini, Alberto E.; and Zener, Clarence, 4,448,024, Cl. 60-649.000.
Zenith Radio Corporation: *See*—
Ciciora, Walter S., 4,449,145, Cl. 358-147.000.

Zentrales wissenschaftliches Forschungsinstitut der Baumwollindustrie: *See*—
Burov, Vadim K.; Vanjushin, Boris M.; Voskoboev, Anatolij E.; Kon'kov, Nikolaj G.; Orechov, Vsevolod D.; Piamannik, Konstantin D.; Svin'in, Michail P.; Fedotov, Michail I.; Damerau, Werner; Dulling, Achim; Heger, Adolf; Reichardt, Gerd; and Wilde, Gotthard, 4,448,048, Cl. 68-5.00E.

Zeugner, Horst: *See*—
Heinemann, Henning; Jasserand, Daniel; Milkowski, Wolfgang; Yavordios, Dimitri; and Zeugner, Horst, 4,448,777, Cl. 424-250.000.

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Ziesse, Norman G., to Bell Telephone Laboratories, Incorporated. High frequency DC-to-DC converter. 4,449,174, Cl. 363-21.000.

Zisa, William J.: *See*—
MacFadden, John A.; Keever, Joseph M.; and Zisa, William J., 4,449,094, Cl. 324-152.000.

Zmijewski, Raymond W. Sine bar grinding wheel dresser. 4,448,184, Cl. 125-11.00B.

Zoecon Corporation: *See*—
Henrick, Clive A., 4,448,965, Cl. 546-302.000.
Lee, Shy-Fuh, 4,448,966, Cl. 546-302.000.
Lindahl, George R., III; and Henrick, Clive A., 4,448,961, Cl. 544-311.000.

Zuckerbrod, David; and Gibney, Ann, to United States of America, Energy. Battery and fuel cell electrodes containing stainless steel charging additive. 4,448,856, Cl. 429-27.000.

Zuckerman, Leonard; and Taddonio, Colin, to Litton Systems, Inc. Start of line detection and synchronization circuit for optical scanning systems. 4,449,046, Cl. 250-235.000.

Zwiener, Rudolf; Lucian, Anton; and Gattiker, Ernst, to Aktiengesellschaft Adolph Saurer. Method for operating a two-phase gripper loom and two-phase gripper loom for performance of the method. 4,448,220, Cl. 139-1.00E.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 15TH DAY OF MAY, 1984

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Adelberg, Marvin. Apparatus for regulating fluid flow through plastic tubing. Re. 31,584, Cl. 251-6.000.

Altex Scientific, Inc.: *See*—
Magnussen, Haakon T., Jr., Re. 31,586, Cl. 417-22.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See*—
Kawasaki, Masahiro; and Sawada, Yoshio, Re. 31,585, Cl. 354-459.000.

Kawasaki, Masahiro; and Sawada, Yoshio, to Asahi Kogaku Kogyo Kabushiki Kaisha. Long time exposure preventing device for camera with electronic flash. Re. 31,585, Cl. 354-459.000.

Magnussen, Haakon T., Jr., to Altex Scientific, Inc. Liquid chromatography pump. Re. 31,586, Cl. 417-22.000.

Sawada, Yoshio: *See*—
Kawasaki, Masahiro; and Sawada, Yoshio, Re. 31,585, Cl. 354-459.000.

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Agfa-Gevaert AG: *See*—
Schlagheck, Norbert; and Rabold, Lutz, 273,872, Cl. D16-34.000.

Alessio, Frank. Teaching clock. 273,873, 5-15-84, Cl. D19-64.000.

Allen, James H., to 'Totes', Incorporated. Umbrella handle. 273,815, 5-15-84, Cl. D3-12.000.

Ambasz, Emilio; and Piretti, Giancarlo, to Center for Design Research and Development NV. Chair. 273,823, 5-15-84, Cl. D6-31.000.

American Standard, Inc.: *See*—
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AMP Incorporated: *See*—
Casciotti, Albert; and Hollyday, Robert D., 273,859, Cl. D13-24.000.

Anderson, Eugene. Tile removing tool. 273,839, 5-15-84, Cl. D8-89.000.

Anderson, Lyman V.; Smith, Carolyn; Grant, John B.; and Roth, M. A., Jr., to Anderson, Lyman V. Combined dispensing rack for rolls of interconnected bags and bag closure holder. 273,826, 5-15-84, Cl. D6-130.000.

Ban, Kimiyoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Video tape magazine. 273,861, 5-15-84, Cl. D14-11.000.

Bart, Philip D., to M & B Toys, S.A. Toy bubble blower. 273,880, 5-15-84, Cl. D21-61.000.

Berges, Jurgen; Fehrenbacher, Wolfgang; Neininger, Gunter; and Scheer, Erich, to Kieninger & Obergfell. Electric clock movement. 273,849, 5-15-84, Cl. D10-129.000.

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Bianchi, John E., 273,821, Cl. D2-400.000.

Bianchi, John E., to Bianchi International. Belt clip for a holster. 273,821, 5-15-84, Cl. D2-400.000.

Bixler, Kenneth D.; Lord, Henry A.; and Reifers, Richard F., to Diamond International Corporation. Egg carton. 273,844, 5-15-84, Cl. D9-345.000.

Bolt, William S. Holding pallet for PC boards. 273,860, 5-15-84, Cl. D13-99.000.

Bowers, James B., to H and H Promotions, Inc. Combined hanging display case and clock. 273,827, 5-15-84, Cl. D6-172.000.

Bremer, Ross L. Tibial torsion splint. 273,897, 5-15-84, Cl. D24-64.000.

Brunner, Merlin A.; Draheim, Harvey J.; and Schaffer, Michael J., to Simmons Universal Corporation. Crib footboard. 273,831, 5-15-84, Cl. D6-191.000.

Brunswick Corporation: *See*—
Fee, Robert W.; and Robbins, Richard J., 273,884, Cl. D22-25.000.
Fee, Robert W.; and Robbins, Richard J., 273,886, Cl. D22-25.000.
Puryear, John W., 273,887, Cl. D22-25.000.
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Bryne, Richard M., to SkidLid Specialties, Inc. Bicycle exercise stand. 273,882, 5-15-84, Cl. D21-191.000.

Buffington, Fred T. Garden tool. 273,838, 5-15-84, Cl. D8-7.000.

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Casciotti, Albert; and Hollyday, Robert D., to AMP Incorporated. Multi pin terminal electrical connector receptacle. 273,859, 5-15-84, Cl. D13-24.000.

Caven, Terence T.; and Ellis, Ronald, to Plessey Overseas Limited. Base unit for a data terminal. 273,865, 5-15-84, Cl. D14-102.000.

Center for Design Research and Development NV: *See*—
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Cerasari, Nicholas P. Snell hook holder. 273,816, 5-15-84, Cl. D3-38.000.

Chace, Thomas R. Plastic strap for lobster pot. 273,841, 5-15-84, Cl. D8-394.000.

Champion International Corporation: *See*—
Tellman, Stephen J., 273,899, Cl. D25-85.000.

Chapman, Roger. Tray accessory attachment. 273,832, 5-15-84, Cl. D6-199.000.

Compagnie Gervais Danone: *See*—
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Convergent Technologies, Inc.: *See*—
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Dart Industries Inc.: *See*—
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De Coster, Pieter K. J., to Dart Industries Inc. Container cover or the like. 273,837, 5-15-84, Cl. D7-391.000.

Dennis, Warren E., to Casablanca Fan Company, Inc. Shade holder. 273,902, 5-15-84, Cl. D26-140.000.

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Desnoyers, Charles, to Dutailier Inc. Ottoman. 273,824, 5-15-84, Cl. D6-36.000.

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Eckmann, John A., to Motorola, Inc. Portable two-way radio or similar article. 273,864, 5-15-84, Cl. D14-68.000.

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Fee, Robert W.; and Robbins, Richard J., to Brunswick Corporation. Fishing reel. 273,886, 5-15-84, Cl. D22-25.000.

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Fenne, Kenneth R.; and Wassell, Carl A., to Techny Industries, Inc. Mobile x-ray apparatus. 273,892, 5-15-84, Cl. D24-2.000.

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Ishiyama, Atsushi, to Yamaha Hatsudoki Kabushiki Kaisha. Motorcycle. 273,854, 5-15-84, Cl. D12-110.000.

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DESIGN PATENTS

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18 : 5,232

48 : 5,233

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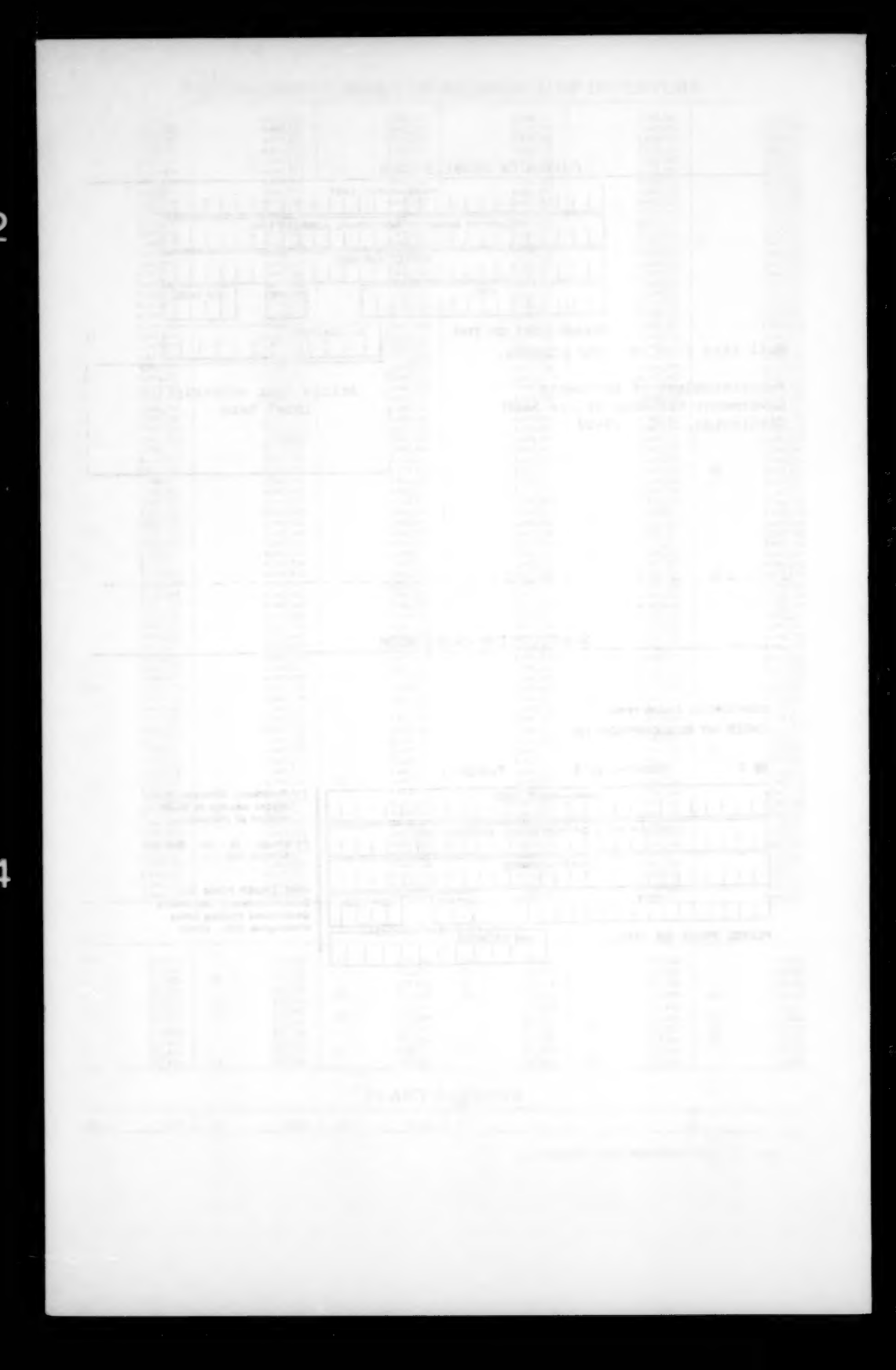
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